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Cut For a WordPress CMS?**

**Content Injection Vulnerability
in WordPress 4.7.0**

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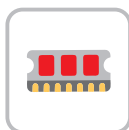
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Is Technology Leaving Our Elderly Behind?

How many times have we seen our seniors fiddling with gadgets that surround them at home but eventually giving up in frustration? Countless. We have drowned our lives or shall I put it the other way round, and say technology has subsumed us completely (read the younger generation), leaving the elders to their fate.

I shall begin with mobile phones. For decades, people of all ages were happy using the landlines, which were designed without any age bias, large digits and dials, simple technology that required no training; so anyone could use them at leisure or in times of dire need. Cut to the year 2000 and the focus shifted towards mobile (feature) phones. Most people took fancy to the new technology and in their quest for saving costs, even got their landlines disconnected. The transition was tough for the elderly. However, the bigger size of mobiles at that point in time was still convenient. Unfortunately for them, the size of feature phones took a hit for marketing convenience. Again our seniors did well to adapt. But fast forward to 2010s and that's where, with smartphones and mobile internet taking centerstage, the elderly got a rude jolt. The blazing speed of operation and the intelligence associated with smartphones means that those with reducing cognitive ability find it extremely difficult to keep pace.

Next, take the case of televisions. In the past, a click on the power button made you good to go. Channel selection meant simply pushing the up and down arrow buttons on the remote. Ditto for sound. Unfortunately, our government decided to tap the 'revenue mine' in the television industry and in walked the conditional access system or CAS. The TV got an additional companion in a set top box and with it all the added complexity and intelligence. So bye-bye to the elderly once more.

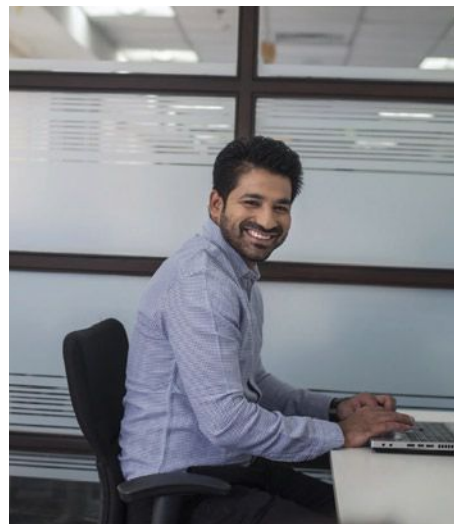
Now I come to our favourite topic of discussion these days. Demonetisation and digital payments. Our digital savvy government feels it's just a matter of time before everybody in the population from young to the elderly shall take to digital means and their reliance on cash shall be a thing of the past. While digitisation is not bad spare a thought for the senior citizens again. While it has failed to reduce their reliance on cash, what it has surely done is to make them more dependent on the whimsical youth within their families, thus putting their privacy and even security at risk.

“
While digitisation has failed to reduce an elderly person's reliance on cash, what it has surely done is to make them more dependent on the whimsical youth within their families, thus putting their privacy and even security at risk.”



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ANDROID VS IOS: HOW THEY STACK UP NOW

Mobile operating systems have come a long way, from EPOC which later transformed into Symbian. The smartphones of the world currently are under the lordship of Android and iOS



– Sidharth Shekhar

Technology enthusiasts have always been lured by this eternal question: which is the best OS? You'll find multiple articles dumped on the internet where writers have already declared the winner and losers. In my opinion, this question itself is regressive as technology is all about introduction, evolution, and decline.

Operating systems as we know them have been around us in many forms starting from PCs to wearables. Mobile OS saw the light of development in the 90s and by the next decade, it evolved into something more powerful and better. From being clumsy and rigid it turned into something more useful and this change took a considerable amount of time. As with everything, technology itself matures and evolves. While the formative years witnessed the rise and popularity of Symbian and Blackberry OS, the current scenario strongly indicates that now this popularity has shifted towards iOS and Android. Both of them were unveiled in 2007. While Android laid the foundation of Open Handset Alliance – a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices, Apple's iOS has always powered their devices such as the iPod Touch (September 2007) and the iPad (January 2010). As of now, Apple's App Store contains more than 2.2 million

iOS applications, 725,000 of which are native for iPads and they have collectively been downloaded more than 130 billion times.

At the core of every technology lies simplicity which comes after constant advancements and progress. This entire mobile ecosystem which is making our lives easy has received support from multiple channel partners which were non-existent before. Strong mobile developer ecosystem has generated billions in revenue for parent companies like Google and Apple.

According to IDC, Android dominated the smartphone market with a share of 86.8% while iOS saw its market share for 2016Q3 grow by 12.7% QoQ with 45.5 million shipments. The iPhone 6S followed by its newest model, the iPhone 7 were the best-selling models this quarter. The iPhone SE and 7 Plus along with its older models accounted for 53.1% of the total Apple shipments this quarter. Modern day smartphones have enabled people to not only talk but also to pay, play and work on them and this interaction is happening on both the platforms – iOS and Android. I believe that technology is not always about numbers/winners/losers but is more about the hold it has on the masses.

iOS and Android are not at war and we have witnessed cross-platform support between Apple and

Share of Popular Mobile OS Amongst Smartphone Users

Period	Android	iOS	Windows Phone	Others
2015Q4	79.6%	18.7%	1.2%	0.5%
2016Q1	83.5%	15.4%	0.8%	0.4%
2016Q2	87.6%	11.7%	0.4%	0.3%
2016Q3	86.8%	12.5%	0.3%	0.4%

Source: IDC, Nov 2016

Google many times. Google has made apps for iOS while iOS has returned the favor by bringing services like the Apple Music on Google Play.

Mobile operating systems have come a long way, from EPOC which later transformed into Symbian, the smartphones of the world currently are under the lordship of Android and iOS.

Smartphones have graduated from being brick-sized to super thin and they are packed with far better specs which get better year after year. Remember IBM Simon? Does that ring a bell? It was the first ever mobile phone to feature apps, using a stylus and touch screen – allowing users to sketch a drawing, update their calendar, write notes, and send and receive faxes. However, with a hefty price tag of \$899, half a kilo weight, and with a battery life of only an hour, it was an impractical device. As far as smartphones are concerned we have come a long way since then. The only burning question of our time is security. Android commands the overall market percentage but in terms of security, it's not secure like iOS or Blackberry operating system. People are very mobile now and they are consuming content on smartphones so security should be the prime concern.

Both iOS and Android should keep innovating

Also, near-stock Android or stock Android experience should be the preferred mode of OS distribution. The problem with running any smartphone on old OS is a serious security concern for manufacturers and developers.

We have seen what happens with bloatware and how it is a bigger headache on Android phones. Not only is it harder to remove (every time you do a factory reset it will come back), but it is an added burden on data usage, battery life, and data privacy.

During his opening remarks for Apple's Q4, 2016 report, CEO Tim Cook identified Android switchers as a source of growth for the iPhone business. And one that's continuing to grow. "As you know, iPhone customers are the most satisfied and loyal customers in the world, and fiscal 2016 saw more customers switch from Android to iPhone than ever before. This is due to the superior customer experience we deliver with our products, and it's something no other company can match," he said.

Because Apple controls both the hardware and software experiences on the iPhone, software updates are a huge draw for iOS and the iPhone. There are people who state this as the main reason for leaving Android behind.

When Apple launched its first iPhone it marked an end for overcomplicated smartphones like Symbian phones and BlackBerry handsets. Post iPhone the entire industry shifted its focus toward a much more intuitive user experience. Apple set the gold standard for the entire smartphone industry which is still copied globally. The other point we tend to ignore is that as a brand Apple is more powerful than Google. Google entered the smartphone industry with Nexus devices and now Google branded Pixel phones but they don't have the same following and respect which iPhone commands. In just two decades, smartphones have transformed the way we work, live and play. However, they will need to keep evolving if they are to maintain their dominance over the next 20 years and powerful and flexible OS will be central to this dominance.

In just two decades, smartphones have transformed the way we work, live and play. However, they will need to keep evolving if they are to maintain their dominance over the next 20 years and powerful/ flexible OS will play a central role to ensure this. □

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UNDERSTANDING THE SEMANTICS BEHIND A VIRTUAL WORKSPACE

We spoke to G B Kumar, VP-Sales India and APAC, Prsym to understand the future of a connected work environment

– Interviewed by Ashok Pandey

Have you ever dreamt about a virtual workspace? Yes, it's going to become our future and it's not about working from home. You would get a virtual workspace with a unique and an innovative environment enabling its users to combine content, applications, video conferencing, live sources and the web into a touch-interactive visual workspace.

Just as you discuss any project sitting in a meeting room, you can also do the same in a virtual workspace, as it's not like traditional systems allowing users to only bring up one piece of content for review at a time. The virtual workspace lets users access, edit and annotate all the data at the same time, regardless of device or geographical location.

Prysm brings a solution called "Visual Workplace". It is a flexible and enterprise-ready solution, offering number of customization options to tailor to specific use cases. It also stated that Prysm is easy and fun to use, and it takes much of the stress and all complexities, out of real-time collaboration and brainstorming sessions. We spoke to Mr. GB Kumar, VP-Sales India and APAC, Prysm Inc to know more about the solution and how it gonna help the business.

The future of workspace

The Virtual Workplace is a software that combines applications, content, the web and video conferencing for enhanced collaborative experiences that can be shared simultaneously by many locations. The solution



GB Kumar
VP-Sales India and APAC,
Prysm Inc



allows to store and organize content into cloud-based visual workspaces enabling persistent access and increased productivity for global and remote teams. A display is required for the setup and that could be from Prysm or you can bring your own touch screen display. It gives you freedom to access private or shared cloud workspaces from anywhere on any device.

The Visual Workplace solution enables the user in a meeting to share and upload content from anywhere with a use of any device. It can be multiple contents side-by-side and allows members to work on it seamlessly. In addition to that, they can take snapshots at any point of time and can send it on an email or can leave it as it is and log-off. The solution offers content persistence, so a user working today on a document can log off and resume after a week where he or she left it and signed out.

Start your project discussing, from where you left

Whatever work and brainstorming that is done in a meeting – for example creating notes and annotations - will reflect when the user will come back and sign in again. All the notes will be reflected as secured and saved on the cloud. This feature is very useful, especially in cross-location collaboration. You can resume your discussion from where you left it, as if you paused the conversation and resuming it again.

Save your data on the Cloud

The content resides only on the cloud in a secure fashion. Through an authenticated login, one can access a particular content and can communicate with the creator of that particular project.

Connectivity is a challenge in India

The solution works well with a fixed bandwidth as it offers a set and dedicated network to the device. However, it's recommended to use 4mbps of internet speed for an effective collaboration experience through the display solutions and on user's mobile devices.

Integrated with any available device

The virtual workspace solution is an open and agnostic platform. It is compatible with existing collaboration and video conferencing solutions. Moreover, you can choose from 65inch, 85inch, 98inch to customized display screens up to 40ft and above depending upon the customer used case.

Affordability of the solution

One can buy user licenses or a pack of 100, 1000 and so on. But, whatever is your choice, experience and features will be the same. The only difference that is there in different packages is the price. □

WHAT PROMISE DOES IOT MARKET HOLD FOR INDIA?

A mobile device can let you control almost every device, be it in your home or office, enabling an automated living

– Ashok Pandey

For many years, we have been seeing a growth in IoT products. There was a time when we could only imagine about smart homes and cars, but now it's becoming a reality and with the help of innovative technology, it's going to change our daily life completely.

You can start imagining driverless cars, a home where you can sit and leave the rest on a smart machine, or many other activities being performed using a mobile device. Yes! IoT can help you to connect any device with your mobile and control that from any distance. India is one of the potential markets for IoT products. In past few years it has witnessed a tremendous growth in the sector but what are the obstacles and trends in this field? Take a look at our interaction with Dr. Rishi Bhatnagar, President, Aeris Communications (India).

Key IoT trends in India

Awareness about the business potential of IoT is definitely growing. Many projects are moving from the drawing board and labs to the field. These are exciting times for us as we are seeing IoT expand into newer segments and touch the lives of citizens. There is immense potential to be realized, especially in sectors such as health-care (remote medicine), heavy machinery automation (IIoT) and environment management.

Opportunities for IoT and benefits of implementing IoT

IoT is an enabler. Business benefits would include improved situational awareness, comprehensive decision analytics, optimized resource consumption, process optimization and instantaneous control; and near real-time response in complicated autonomous systems. Healthcare, manufacturing, energy, agriculture, automotive are a few sectors which are interested in implementing IoT.

Challenges to Indian Market

One of the major challenges is the availability of high-speed internet connectivity. With the arrival of 5G, this will no longer be a concern. You see, we are still in the early stages of IoT adoption. The ecosystem is maturing here. I wouldn't like to address

Future of IoT in India



Dr. Rishi Bhatnagar
President, Aeris
Communications, India

"I am optimistic about the prospects of IoT in India. India has a habit of leapfrogging across technologies because we are the nation of possibilities and potential and time and again we have risen to address complex challenges using technology – be it the green revolution or the mobile revolution, we have shown

we our capabilities in the past and will continue to do so in the future. With IoT acting as a primer for change, the possibilities get multiplied by a factor. Beyond smart cities and connected healthcare, India will see another revolution in agriculture produce management with IoT-driven supply chain management practices."

such issues as challenges instead we can call them opportunities. These are gaps that are waiting to be addressed through innovation. We have to look beyond such challenges. Even in the case of 5G, the Indian Government wants the nation to get 5G along with rest of the world and that is a significant step.

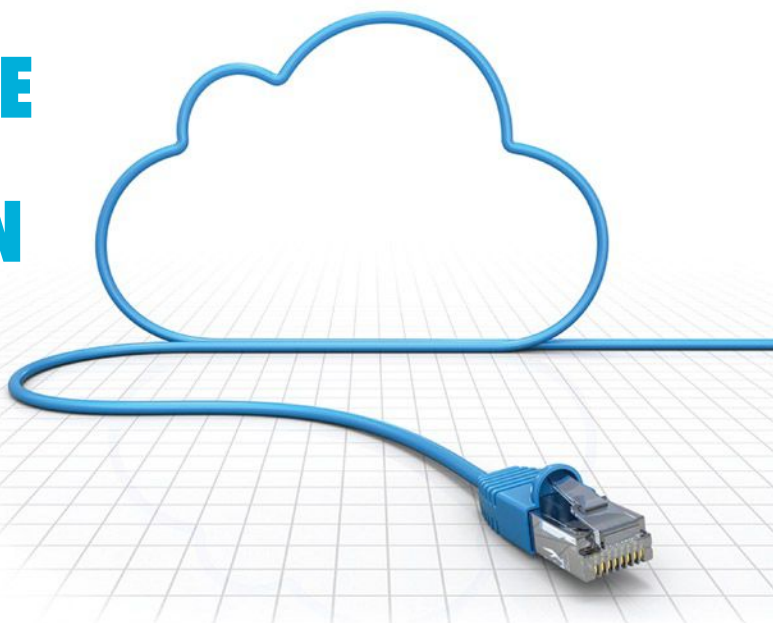
Countries across the globe are today looking up to India to solve critical problems in the healthcare, service delivery, transport, communication and education domains and we have to recognize the role IoT will be playing in this. IoT, as I have said before, is an enabler. It is a solution that fosters solutions.

Real life examples of IoT pilots or initiatives in India

A leading healthcare provider is using IoT solution to monitor temperature variation in refrigerators storing vital fluids. There's a law enforcement agency using our solution to curb instances of drunken driving. And these are just a few examples. We have many other IoT solutions that have been successfully deployed. □

5 WAYS TO ENSURE A SUCCESSFUL CLOUD MIGRATION

Migrating to cloud environment from an in-house environment can be a tricky proposition and the complexity only increases with the size of the migration. Here we discuss the five key issues to keep in mind before planning a large cloud migration



– Adeesh Sharma

1. Clearly define what you are going to move

The organisation should be very clear on the number of servers and application workloads it plans to move the cloud and also the ones it feels can't be moved due to security concerns. Accordingly a migration plan must be worked out so that downtime is minimal and so are the costs.

2. The reason for migrating should be well understood

This would help in defining your objectives for migration and help you set a timeframe for achieving them. The long-term benefits of moving to a cloud platform should be clear to all stakeholders so tomorrow if something does not work out as planned, then there should be minimal internal wranglings.

Choosing a cloud service provider does help organisations in managing sudden spurts in workloads and also in engaging with their customers better. This holds true even more when clients are spread across geographies. The cloud also free up IT resources for the internal teams to deploy elsewhere or work towards improving efficiencies of core business processes. So, jot down your top reasons for migrating and share with all, before beginning the exercise.

3. Shortlist all that you want from the cloud migration

This is one tricky part and organisations would do well to take time and clearly demarcate their set of requirements from a cloud service provider. For instance, what workloads are you exactly planning to move and when. Also, both the business and IT teams must take

each other into confidence and work out details in terms of costs to be incurred, resources to be deployed, the security plan in place. One word of caution here: be absolutely sure of the resources you have for the cloud migration and whether they are sufficient or not. Another key concern should be how it's going to affect your people: customers and employees.

4. Are you even ready for the cloud?

The organizations should know what workloads they have, which workloads they need to move, and in what order they need to migrate them. The IT team should know the technical details of the migration, how much it is going to cost and how long will take to complete the migration. Also is the organisation even going to benefit from the migration or not? Does it serve its business interests well? Also, as far as impact on employees or customers is concerned, there should be not let down in their efficiency or convenience.

5. Ask how peers have fared

Each organisation that plans to move business processes to the cloud, should check how others with similar maturity levels have fared during their migration activity. The cloud service providers do a maturity assessment for their customers but you should be asking tough questions on what all can possibly go wrong or where extra care needs to be taken. Do study all SLAs carefully and collect key information such as people costs, third party implementation partner costs, application costs and literally everything else that's directly or indirectly related to the migration process. □

CARRY THESE FIVE DESKTOP PCS IN YOUR POCKET

Desktop PCs vary in price, size and the ability to multitask. Here, we present five such desktop PCs that let you work on, as basic a task as document processing or as intensive one as playing games

– Adeesh Sharma

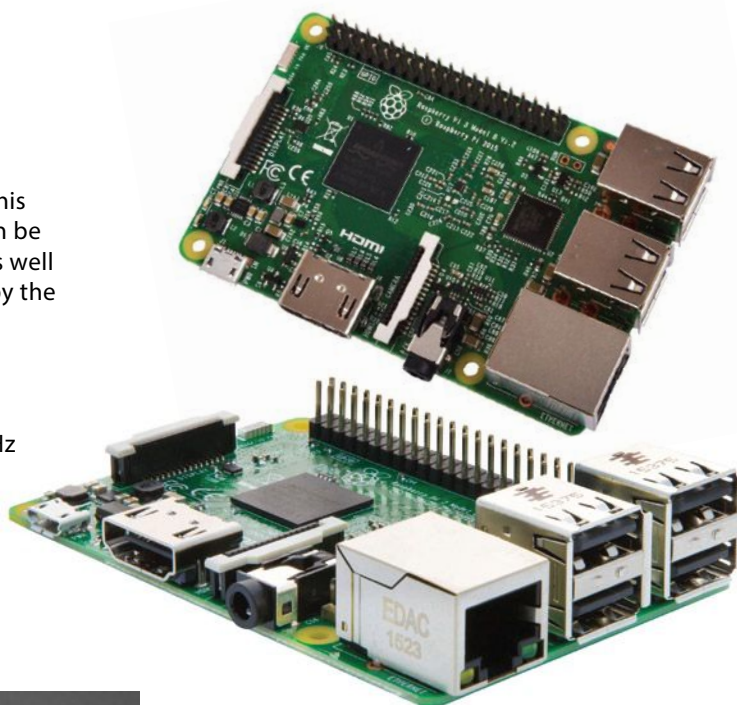
Raspberry Pi 3 B

Price: ₹2,899

For those with an intuitive bent of mind, this cheap-as-a-dirt single board computer can be used for basic browsing and office tasks as well as a media center. All this made possible by the ability to run multiple OS.

Key specs

Weight 59 g, 8.6 x 5.4 x 1.7 cm, Broadcom BCM2387 chipset, Processor Speed 1.2 GHz Processor, RAM 1 GB, Broadcom Graphics Chipset, VideoCore IV card



ASUS CHROMEKIT-B019C (CS-10)

Price: ₹5,700

The Chromebit is probably the smallest Chrome OS device as it measures just under 5 inches. It can be used to turn your monitor or TV display into a computer. Simply plug the device into the HDMI port and pair it with a Bluetooth keyboard and mouse. Apart from basic computing and multimedia applications you can also use it for business applications.

Key specs:

Weight 77 g, 12.3 x 3.1 x 1.7 cm, Rockchip RK3288 Processor Speed 1.8 GHz, Memory DDR3, Hard Drive 16 GB, Graphics Coprocessor ARM Mali-T624, Wireless Type 802.11 a/b/g/n/ac, Number of USB 2.0 Ports 1, Voltage 12 Volts, Chrome OS, AC Adapter, Internal WiFi Antenna

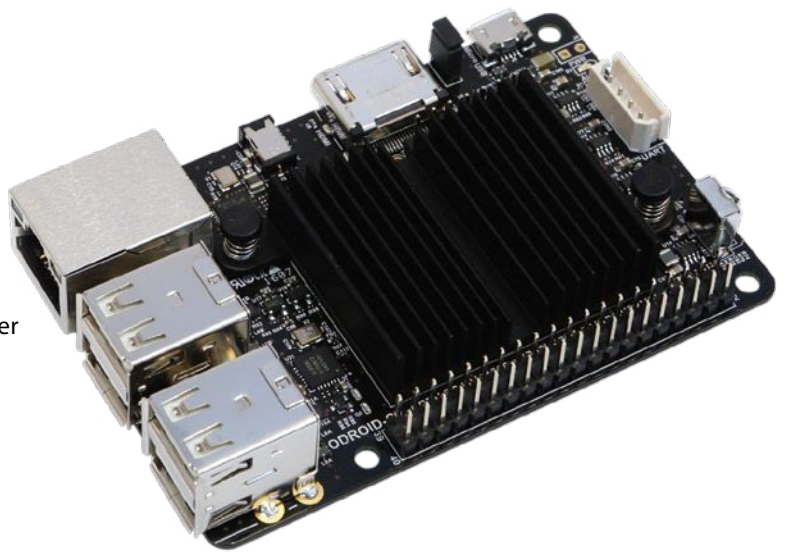


Odroid-C2

Similar to the Raspberry Pi 3, this pocket PC has more memory and faster Ethernet. However, it lacks built-in WiFi support. Moreover, being less popular you might miss the growing and more vocal community that's been built around Pi.

Key Specs:

Ubuntu 16.04, Android 5.1 Lollipop or other Linux-based systems, CPU: 1.5Ghz quad-core Amlogic ARM Cortex-A53, 2GB DDR3 SDRAM, HDMI 2.0 port, eMMC5.0 HS400 Flash Storage slot / microSD card slot, Gigabit Ethernet, Four USB 2.0 ports, 40 gms, 3.34 x 2.2 inches



Lenovo Ideacentre Stick 300

Price: ₹9,990

This PC stick can be used to convert any TV or monitor into a handy PC by connecting it via the HDMI port. It measures just 100mm in length and can be kept in pocket while travelling. The pocket PC is good enough to be used as a basic productivity machine, browse internet, play games, etc.

The Lenovo Ideacentre Stick PC 300 is powered by a quad-core Intel Atom processor paired with 2GB of RAM. It supports Windows 10 and there is 32GB of inbuilt storage which can be expanded up to 128GB using microSD card.

Key specs:

Intel Atom processor, Windows 8.1/Windows 10 with Bing for Stick PC, RAM 2GB, Storage 32GB (expandable up to 128GB via microSD card), Micro-USB @5V/2A, Integrated Wireless/Bluetooth



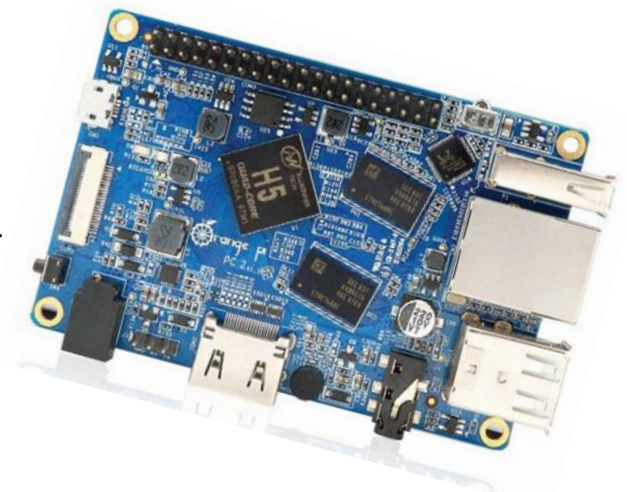
Orange Pi PC 2

Price: ₹1,890

This is a cheaper alternative to the Raspberry Pi 3 with downgraded specs such as missing WiFi support. Moreover, the motherboard runs a custom version of Raspbian OS and the support for other Linux-based OS could not be as robust.

Key specs:

Raspbian, Ubuntu, Android and other Linux-based OS, Allwinner H5 ARM Cortex-A53 processor, 1GB DDR3 RAM, HDMI 1.4 with CEC support, AV port, microSD card up to 64GB, 8Mbit SPI NOR flash, Gigabit Ethernet, Three USB 2.0 ports, 38 gms, 3.34 x 2.17 inch dimensions



10 REASONS WHY BUYING A TELEVISION SHOULD NOT BE TOO MUCH OF A FUSS

We look at the key reasons to consider before selecting the right LED TV for your needs

– Adeesh Sharma

The market, both offline and more so online, is flooded with televisions whose prices vary wildly for the same size. And it's been an age-old practice for people (manufacturers, salesmen, and tech geeks on various portals) to bombard people with too much of tech jargon and lofty claims on picture quality and aesthetics to allure you into buying one. However, very few intend giving you a holistic picture of what a worthwhile TV along with its associated ecosystem (read content) should actually be like.

This article intends to ease the process of sifting through the jargon in an easy and concise manner to help you feel confident when you try shortlist your next TV.

1. Pay more emphasis on the specs sheet than the marketing brochure and do a one on one comparison based on features such as size, contrast ratio, smart capability, screen thickness, weight, etc.

2. Go for as big a screen as possible. While this was a costly proposition not too long back, now with the entry of newer players in the market, the prices of bigger screen TVs have come down. Also, with still very less 4K content available it always makes more sense to go big on screen than on features such as 4K, HDR, or even Smart TV. Initially you might be overwhelmed by the size of a big screen in your home but eventually you get used to it and won't regret your decision. However, going big does not mean being unreasonable. We recommend a size of 32" and 40" for bedrooms while living rooms could make do with 42" and above.

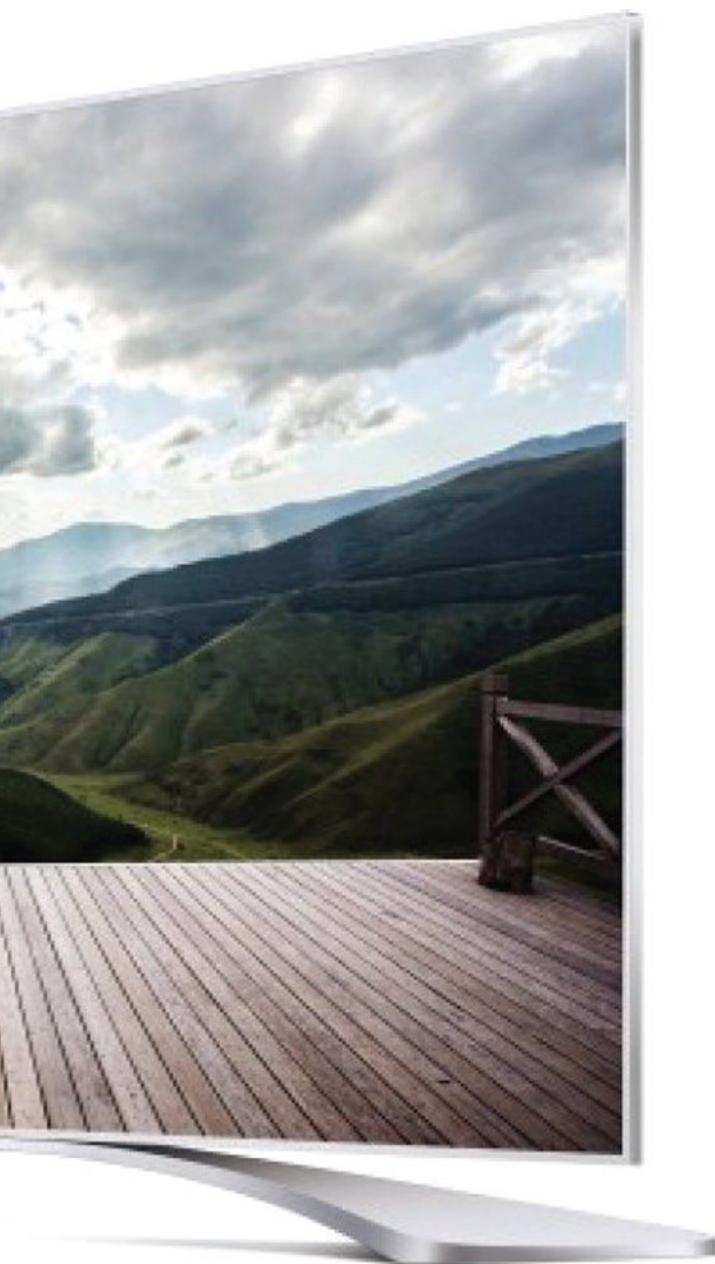
3. 4K is soon going to replace full HD TVs. TVs with 4K resolution have four times as many pixels as 1080p resolution TVs, however, lack of 4K content prevents people from buying them. Prices are coming down so expect more and more manufacturers to come out with more models while full HD TVs start getting phased out.

Most high-end 4K models also offer HDR compatibility which means better contrast and colour but again you'll

be able to notice the difference when you actually watch HDR content. Since 4K shows are non-existent in India you'll have to invest in a Blu-ray player, which supports HDR, and discs to play on it.

4. Do not compromise on picture quality at any cost. Watch a TV in real and do compare with others, and of course, trust your eyes alone. This might prove to be a little tricky initially, especially with competitively priced models jostling for attention. In case you do not place too high a premium on picture quality, then you might as well do a quick sort on TVs by price along with the screen size and choose the cheapest





from amongst the shortlisted brands. OLED TVs offer the best picture quality but are far too expensive. Rest every TV uses LED LCD technology with the ones using local dimming and full-array LED backlights outperforming the ones with edge-lit LED backlights. However, most budget LED TVs come with edge-lit LED backlights only so if money is a constraint then there is hardly any choice. The ability to produce a deep shade of black or in other words a high contrast is the most important feature in a good picture. Color saturation, that is influenced by the contrast level, and color reproduction accuracy are other important factors. Also, for a bright

room, matte screens are the best at reducing reflections. The choice between 4K and 1080p should come in next. However, do note that poor picture settings on a good TV would make it worse than well calibrated settings on an average TV.

5. No point investing in a Smart TV. You may as well connect any inexpensive HDMI stick such as Google Chromecast to make your dumb TV smart. Likewise, do not go for TVs with a limited apps packaged along when you can access the entire Net through your smartphone.

6. Curved is the latest fad, but could simply pass away. We have frankly not observed any urge to go with a curved TV as any good quality large screen TV does provide a quality viewing experience. The curved TV might actually prove to be a distraction. Plus, it occupies more space as compared to flat LED TVs hung up on the wall.

7. 3Ds are already dead so don't even go out looking for one. Their fad started somewhere around 2010 with the release of some of the popular Sci-fi movies in Hollywood. However, they could not get mass acceptance as wearing special glasses and worse regularly charging them was a actually a pain.

8. This is one important aspect to consider before making the purchase decision. The more the inputs the better as you need to connect a lot of peripheral gadgets throughout the life of a TV. And with time some of the ports might actually go bust or their pins could simply wear off. As a thumb rule, just count the number of devices you'll want to connect, and make sure your TV has at least that many HDMI and USB ports. And you might do as well with cheap HDMI cables; no need to look for the gold coating on connectors!

9. Go for a remote with as much functionality and controls as possible. A universal remote is always better but the ones with conventional buttons with a good tactile feedback always perform better. You might get allured initially by the touch-based remotes which might boost your internet surfing experience. However, do remember that internet is best surfed through a smartphone that streams to an LED television using an HDMI stick.

10. Watch out for thinner and aesthetically sleeker models. Yes, most manufacturers have set sights on making the LED television as thin as possible, with photo frame thin TVs gaining popularity. The idea is to occupy as much or as less a space as a picture frame hanging from the wall. However, such the OLED TVs do better with lesser depths as compared to LED-backlit LCDs as they might suffer from picture contrast issues. □

HOW AUTOMATION HELPS ACHIEVE ENGINEERING EXCELLENCE

Through the use of intelligent algorithms and the digital platforms offered by smartphones, engineers are able to solve most modern-day problems

– Dr. Gopichand Katragadda, Chief Technology Officer, Tata Sons

Developing into a good engineer is a lifelong venture. Engineers have created the world we live in today. The industrial ages of mechanisation, electrification, and digitalisation are the consequence of engineering excellence. Each age has impacted the work environment and the skills required for success. With the advent of mechanisation came factories and the nine-to-five work culture. Engineers designed, built and diagnosed the steam engines, the cams and the pistons that mechanised all production processes.

With mechanisation came rapid transportation systems by land and sea, enabling larger global trade. Electrification enabled higher efficiency in operations making mass production possible with every factory tool being motorised and the creation of the modern production line. Engineers designed and built electricity generation, transmission, and distribution equipment that brought electricity to homes, factories and farms.

With digitalisation, the primary work location shifted from the factory to the office. Increasing level of automation and remote operation of factories allowed engineers to focus on electronic design and software implementation for factory and office automation. Today, with the democratisation of digitalisation offered by mobile phones, engineers are building cyber-intelligent systems that digitalise every conceivable decision through algorithms.



Dr. Gopichand Katragadda
Chief Technology Officer,
Tata Sons

“Increasing level of automation and remote operation of factories allowed engineers to focus on electronic design and software implementation for factory and office automation.”

Despite the rapidly changing environment, the underlying basis for engineering excellence endures. Broadly speaking, I group engineering excellence into three categories: 1) building a solid foundation, 2) developing an engineering mindset, and 3) focusing on execution.

Build a solid foundation

- 1. Strong fundamentals:** When in doubt, always go to the fundamentals. Be it Newton's Laws or the derivative Navier Stokes Equation, Maxwell's equations or the derivative static, diffusion or wave equations. It is important to understand the physical meaning of mathematical expressions and be able to hand calculate approximate values of variables for critical verification. It is also important to understand the limitations of numerical methods and determine where experimentation is necessary.
- 2. Deep technical focus:** Each new learning experience is just a door that opens up a myriad of unknowns. It is important to focus and develop deep-rooted expertise in a single technical area for a minimum of six years early in one's career. It is also true that once an expertise is developed, the ability to translate the learning to other technical areas is relatively quicker and easier.
- 3. Hands-on expertise:** There are a number of hurdles to be overcome between a thought experiment or theory and actual realisation in the field. It is important to take every opportunity to experience the complete product life cycle. Books cannot capture or substitute the lessons of hands-on learning. Speed in engineering comes from a gut instinct of what might work.
- 4. Simulation expertise:** Experimentation matters. With advances in simulation, the volumes of iterative physical experiments required have been dramatically reduced through the effective use of validated models. It is important for modern-day engineers to effectively use simulation tools and computational power at their disposal. At the same time, it is important to understand and prevent numerical errors that creep in through a variety of sources.

5. Continuous learning: Once an engineer, always a student. The accumulated knowledge in engineering is huge, but miniscule compared to the amount of unknown possibilities in the physical world. An engineer excels by continuously striving to be at the edge of knowledge and scientific progress. It is the mapping of a new science or material to new market needs that advances the frontiers of engineering.

Develop an engineering mindset

- 1. Attention to detail:** The devil is in the detail. Engineering is about figuring out the details. Many showstoppers are not apparent at the big picture level. Manufacturing issues, cost issues, life issues, and 'maintainability' and 'inspectability' issues are amongst the many issues that need to be fleshed out. Solutions to problems can create new ones in their wake if regression analysis and testing are not performed. Engineering excellence, hence, is in the detail.
- 2. System-level thinking:** 'The whole is other than the sum of its parts.' From an engineering standpoint, it is important to be able to define and model complex interactions among components that make up an engineered system, and implement the system with effective use of available resources. While we work on a component, the system should not be forgotten. In system engineering, the output of a system is typically linked to a customer need.
- 3. Market and customer orientation:** First understand what the market needs and then proceed to make it. Engineering is about serving the market. Every feature should be looked at from a customer's viewpoint. This does mean not just listening to the customer. It also means anticipating the customer need and changes in the market. It is important to maintain an external connection through journals, tradeshow, databases, industry peers, end-customers and emerging markets.
- 4. Innovation and change orientation:** Innovation is finding new ways of creating value. An engineer should keep abreast with the cutting edge technology, while serving the current market needs. Every new market need and customer problem can be looked at as opportunities to innovate, leveraging the latest knowledge in the field. Innovation is clearly not only idea generation, but also the ability to take the idea to market. Innovation needs the engineer to create with freedom, nurture with passion and change with detachment.
- 5. Engineering judgment:** An ounce of engineering judgment sometimes works the miracle of tonnes of analysis. Engineering judgment comes from

the confidence and decision-making capability developed through technical knowledge, experience and an appetite for risk-taking. Engineering judgment enables the engineer to quickly sense and articulate risks, and also come up with optimal solutions to complex technical problems. Engineering judgment is a starting point and needs to be followed by detailed analysis, experimentation and validation.

Focus on execution

- 1. Critical analysis:** Measure twice and cut once. The ability to draw the right engineering conclusions from available data includes understanding whether the data is insufficient to support a claim and what additional data would enable a better conclusion. Also important to critical analysis is knowing which tool or experiment would give you the best information required to make the right conclusion and decision.
- 2. First time right and design margin:** Quality is reputation, quality is credibility and quality is revenue. With products such as aircraft engines and nuclear reactors in the portfolio, there is no second chance. Being right the first time with adequate design margin is of paramount importance. Having the right tests and statistically significant number of tests to ensure confidence in our designs and testing our designs for failure to understand the validity of our design margins is critical for success.
- 3. Detailed documentation and design practices:** Work not documented is work not performed. Every engineering success and every failure has a lesson that needs to be shared. Documenting is also a way to unlock certain missed details. By writing for others, you articulate certain assumptions, which upon expression might throw new light on the problem being addressed. Documenting your work is also a means of collaborating with yourself over time. Design practices are vital to ensure design knowledge developed through intense analysis and experimentation is transferred to the engineering community.
- 4. Cost / productivity consciousness:** One of the responsibilities of an engineer is to take an idea to market. A significant component of success in the market is to be able to give the best value. To ensure good contribution margins while providing excellent customer value, an organisation has to have a handle on the cost and productivity.
- 5. Sense of urgency and desire to win:** Sometimes it is all about time-to-market. The engineering incentive is to be the first with an elegant technical solution to significantly enhance human health or comfort in an environmentally friendly way. □

'BANKS TO ADOPT AADHAR ONLINE AUTHENTICATION & E-SIGN TO REDUCE SERVICE DELIVERY TIME'

We spoke to Murari Sridharan, Chief Technology officer, Bankbazaar.com about the countless technology and business impediments in the Indian fintech and banking sector and how an effectual mobile revolution and digital technology can help alleviate these hurdles

– Nijhum Rudra



Business and Technology Challenges

B“Issues like cybercrime and security continue to remain core concerns for the Indian fintech sector,” said Murari Sridharan, Chief Technology officer, Bankbazaar.com. Cyber security of all assets – IT servers, PoS, ATMs, card security – is a big challenge as newer threats are constantly emerging.

The pace at which technology is developing is itself another problem. Rapid changes in technology every year makes it difficult for banks to keep pace with the changes, and so they are no longer the innovators or first movers when it comes to technology-based innovations, be they are wallets, P2P lending, paperless procedures, or robo-advisory services.



“BY TYING THE TWO TOGETHER, BANKBAZAAR HAS A TRIED TO GAIN A DEEPER UNDERSTANDING THE CUSTOMER. AS A RESULT, IT HELPED TO PROVIDE PERSONALIZED SERVICE TO EVERY CUSTOMER INSTEAD OF TAKING A ONE-SIZE-FITS-ALL APPROACH.”

—Murari Sridharan
Chief Technology officer, Bankbazaar.com

However, it is not only implementing technology itself per se but the utilization of technology as well that poses problems. Embracing digital requires a culture and a mindset change. Technology is not about having the fastest processors or the biggest infrastructure. “What is more important is to build a modular scalable infrastructure that can keep up with the evolving technology and handle increasing volumes,” added Sridharan. This needs to be supported by in-depth analytics derived from digital footprints of the customer. All these need to be tied together by strong process innovation for an entirely paperless, presence-less vision, which is the need of the hour.

Embracing digital isn't about putting out a mobile app. That is merely a start. For a truly digital process, the whole experience needs to be seamless and end-to-end so that it can remove hassles for the customer and make their journey frictionless. Technology by itself isn't a competitive advantage; it is what companies do with it, how they develop a unique, personalized experience for the customer that will be the key differentiator.

Role of Bankbazaar

BankBazaar is uniquely poised to help as it is a technology leader that has been pioneering paperless, presence-less vision for financial products. BankBazaar also built up a scalable and secure infrastructure that can adapt to changing customer demands as well as evolving technology needs. “By tying the two together, BankBazaar has a tried to gain a deeper understanding the customer. As a result, it helped to

provide personalized service to every customer instead of taking a one-size-fits-all approach," said Sridharan.

Mobile Revolution in the Fintech Sector

Mobile technology is a way for financial inclusion. While banks have struggled, mostly with costs, to get more people to be part of the banking industry, mobile suddenly provides a ubiquitous, cost-effective way to reach the customer. Mobile revolution combined with payment revolution and initiatives like India Stack are democratizing finance to a point where a bulk of the technical challenges is solved outside of the banking industry. As said earlier, the technology itself won't be the competitive advantage; it is about what these companies do to build on top.

Latest Technologies Driving the Fintech Space

"One thing that is happening already and is expected to gain further momentum in the coming days is instant, presence-less, paperless, cashless delivery of financial products using digital and paperless techniques," remarked Sridharan. Mobile, of course, is one of the prime drivers. Coupled with hardware for biometrics and cashless payments using UPI, it is providing a strong case for even the most conservative banks to embrace presence-less banking.

Non-traditional banking, driven primarily by wallet and payment solutions is moving away from traditional ways to

check credit worthiness for lending. Predictably, data will also be a big game changer. Use of Big Data and Artificial Intelligence will take physical, people-facing advising to online, robo-advisory based on data in a bigger way. These are making managing and investing money way simpler.

Blockchain is not just transforming banking but everything on the Internet! It provides a secure tool that makes it easy to do cost-effective and de-centralized transaction management. For banking and financial companies this means safer, faster, and cheaper transactions at scale and for the customer much lower fees. "We foresee use of block chain technologies for specific use cases within banking industry," added Sridharan.

The Roadmap

Banks will go from physical, paper-based procedures to online, digital, paperless procedures to increase customer convenience, improve efficiency, and reduce costs. Banks will start using more data and better data mining for better services to customers, reduce NPAs, and to reach vast set of people who do not have previous financial history.

"Banks will adopt new technologies like Aadhaar online authentication and India stack services like eSign to reduce service delivery times from many days/weeks to instant service," Sridharan Concluded. □



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SIX CLOUD SERVICES FOR EMERGING ENTERPRISES

According to a recent report by Gartner, cloud computing will constitute the bulk of IT spending in the near future. In India alone, it is predicted that the cloud market will reach over \$3 billion by next year

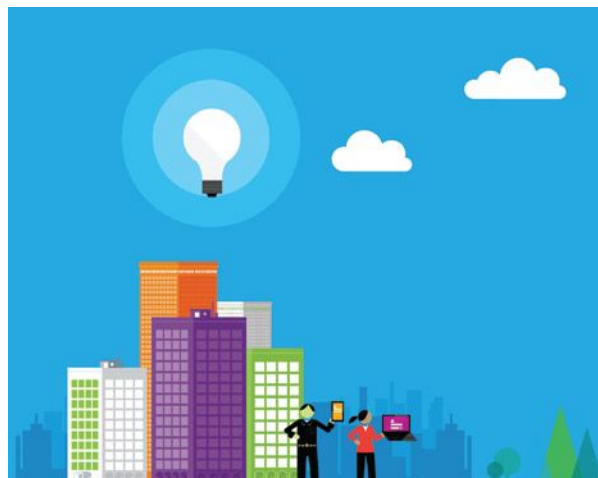
- Sidharth Shekhar

Cloud computing has changed the way IT solutions are delivered and how end-users put them to use. It has changed the digital landscape and there's no doubt that it will continue to do grow.

According to a recent report by Gartner, cloud computing will constitute the bulk of IT spending by 2016. In India alone, it is predicted that the cloud market will reach over \$3 billion by next year.

In India, it will be directly affecting the small to medium-sized businesses (SMBs) which are dotted across the country. This sector employs 40 percent of the workforce and is growing at a rate of 8 percent per year.

Every major IT player in the country has jumped onto the cloud bandwagon along with international players like IBM and Microsoft. Through this article, we analyze the best cloud services offered to the Indian enterprises and the reason that make their services unique.



Microsoft Azure

The Microsoft Azure is a secure solution that can listen, learn and predict by turning data into actionable insight that enhances business opportunities.

Azure supports many operating systems, programming languages, frameworks, tools, databases, and devices. You can run Linux containers with Docker integration; build apps with JavaScript, Python, .NET, PHP, Java, and Node.js; build back-ends for iOS, Android, and Windows devices. Azure's pay-as-you-go services can quickly scale up or down to match demand, so you only have to pay for what you use.

Benefits: Azure's predictive analytics services, including Machine Learning, Cortana Analytics and Stream Analytics, worldwide network of Microsoft-managed datacenters, first major cloud provider to adopt the new international cloud privacy standard, ISO 27018.



Salesforce

Salesforce Service Cloud is a customer relationship management (CRM) platform for customer service and support, based on the company's CRM software for sales professionals. It allows users to automate service processes, streamline workflows and find key articles, topics, and experts to support the agent. It intends to foster one-to-one marketing relationships with every customer, across multiple channels and on any device.

Service cloud can "listen" and respond to customers across a variety of social platforms and automatically route cases to the appropriate agent. Social customer service is integrated with the Salesforce Customer Success Platform, which allows the social team to collect a comprehensive picture of the customer to inform responses.

Service for Apps makes it possible to include customer support software into applications. In-app mobile support can include live agent video chat, screen sharing, and on-screen guided assistance.

Benefits: Multiple Sales Console Apps, Advanced forecasting, Enterprise territory management



Concur

Concur Technologies provides travel and expense management services to businesses. Cloud Computing or software as a service (SaaS) has brought a huge difference in the ways in which business is done today.

The Concur software is completely managed in Concur's T&E (Travel & Expense) cloud which can be scaled and configured to specific needs. The infrastructure is made absolutely compatible to connect to any internal client system via API's; hence, you don't have to invest in additional hardware, software, extra servers or licenses. Concur itemizes data from receipt images and travel companies and matches it to credit card data, creating more accurate information for expense reporting.

It provides real-time data backups and strictly adhere to Indian and international security standards (ISO).

Benefits: High granularity access control, audit logs, vulnerability management, security scanning and continuous monitoring to ensure comprehensive corporate data security, ISO27001 (BS7799 certified since 2004), Concur mobile app.



Sify Cloudinfini

Sify Cloudinfini is an 'Enterprise Public Cloud' platform that delivers Cloud solutions to enterprise customers. The platform offers ready-to-use virtual private data centers on a multi-tenant and secure cloud infrastructure that enable the hosting of demanding e-business applications in an enterprise-grade infrastructure running through top tier Data Centers.

It offers a wide array of product plans across the compute, storage, network, security, analytics, and protection stack, to provide end-to-end IT infrastructure on the pay-per-use basis. The Cloud Infrastructure, by default, is provided with software/hardware firewall and the back doors in OS/DB are closed by security teams to avoid malicious attacks. Additionally, Managed Security services (FortKnox/DDoS) can be overlaid over standard cloud services to reduce further security risks.

Benefits: India's first SSAE-16 cloud certified provider, mandatory software and hardware firewall for all tenants, segregated Virtual Local Area Network, patch management at regular intervals, vulnerability analysis for networks, applications, and databases, 24/7 SOC monitoring.



2nd Watch

2nd Watch provides a range of tools, services, and expertise that help businesses migrate enterprise workloads to the public cloud, including Amazon Web Services Infrastructure-as-a-Service, to help reduce IT costs and complexity.

In addition to providing managed cloud and migration services, 2nd Watch offers workload solutions in a range of vertical industries including financial services, insurance, life sciences, retail, consumer packaged goods, and media and entertainment.

Benefits: First cloud company with SOC2 compliance, no need to hire departments of specialists to handle public cloud.



Infosys

Choosing the right technology and the right partner to design and implement a cloud strategy can be a tricky business.

Infosys cloud services are designed to help organizations make the right choices in maximizing returns from their cloud investments. Infosys managed public cloud offerings provide end-to-end services, right from strategy definition, roadmap creation and implementation, to migration and operations.

Infosys Hybrid Cloud Transformation ensure the seamless migration of applications and workloads to the cloud, integration of applications and data across private and public clouds, multi-vendor management, and management of ongoing cloud operations.

Benefits: Flexible and scalable, security.

ADVANCEMENTS IN CLOUD BASED HEALTHCARE

The cloud caters to all the requirements, providing healthcare organisations with an incredible opportunity to improve operational efficiencies and reduce the cost of care

– Sameer Bhat, Vice President, e-Clinical Works

The world is at the cusp of witnessing impressive progress in technology in every sector and area of life. With healthcare being an essential component of our lives, the industry is also not far behind in this technology race. With exponential growth in the number of smartphone users and with the government seeking to unify and level the platform with the Digital India initiative, cloud-based services are becoming widely adopted by healthcare organisations. In turn, the healthcare industry is shifting towards an information-centric care delivery model, enabling collaborative workflows and information sharing. At the forefront of the digital platform, the primary focus is on data driven, patient centric healthcare.

Health enthusiasts are driving the growing demand for greater access and portability of their health information. To assist in delivering their needs, cloud computing is emerging as a solution to bridge the gap between doctors & the patients. It saves healthcare costs while boosting speed and efficiency. Thus, accessing or monitoring the healthcare related information across the globe would be easier with implementation of cloud services.

Cloud computing is an application that runs on shared servers and simplifies the computing model for organisations. Emerging as a vital component in the industry, this technology caters to all of the necessary requirements. A large and growing percentage of hospitals

and health care providers are deploying cloud technology, storing data, including clinical applications and e-mail in the cloud.

Electronic Health Records (EHR) which refers to the systematised collection of patient and population health information, electronically-stored in a digital format, is the new age way to easily access health information. Records can now be shared across a network, including a detailed bio-data which contains the demographics, medical history, medication and allergies, immunisation status, laboratory test results, radiology images, vital signs, personal statistics and billing information of the patient. EHRs are designed to store the data over a long period of time. The effectiveness is evident when it comes to extracting medical data for the examination of possible trends and long term changes in a patient. EHR data can be combined with several additional information sources, such as billing and health risk assessments, once it is accessible on the cloud. Since most parts of care have been digitised, it is essential to involve the technology further to improve experience. The technology improves patient care by making information sharing more timely and efficient.

The cloud caters to all these requirements, providing healthcare organisations with an incredible opportunity to improve the delivery of care and operational efficiencies and reduces the cost of care. It helps in sharing information easier than ever before, improving operational efficiency at the same time.

A driver for enhanced improvement, cloud technology is a permanent solution for the healthcare industry with respect to the services it offers, its operating models, capabilities and end-user services. Daily challenges are faced in the healthcare industry such as managing medical information, storing data, retrieving data or accessing, which could be eliminated with cloud computing. The healthcare industry's migration to cloud is inevitable; it is only a matter of time that all healthcare organisations adopt cloud computing & take advantage of this rapidly growing and useful technology. The growing trend in the healthcare industry is for all organisations to transition to the adoption of cloud computing and utilise the leading technology. □



“A DRIVER FOR ENHANCED IMPROVEMENT, CLOUD TECHNOLOGY IS A PERMANENT SOLUTION FOR THE HEALTHCARE INDUSTRY WITH RESPECT

TO THE SERVICES IT OFFERS, ITS OPERATING MODELS, CAPABILITIES AND END-USER SERVICES.”

— Sameer Bhat
Vice President, e-Clinical Works

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THE RISE OF SUPERINTELLIGENT MACHINES

Artificial Intelligence is the next big revolution of our times with billions of dollars being pumped into deep learning platforms, natural language generation companies and AI-optimized hardware. We must ensure that it is allowed to reach its full potential in benefiting the industry and is not hijacked by forces inimical to progress

– Sidharth Shekhar

The Great Industrial Revolution in England was successful as it was backed by an imperialist government which made sure that it had the capital and a ready market to dispose of the product. The control over the ocean routes assured their global reach and it was financed by banks, investors and liquidly traded bonds. In a nutshell, the British industrialization received support from the government which was imperialist in nature and was supported by multiple entities at the same time thereby ensuring its success. It has immeasurably improved everyone's life over the last couple hundred years.

In the current scenario, AI has the support of all the present technologies to reach its desired goal – being a superintelligent machine. We have developed a powerful network through 5G and connected systems are rapidly evolving. Multiple startups working in related fields are getting acquired by internet giants and billions of dollars are getting pumped into deep learning platforms, natural language generation companies and AI-optimized hardware.

We all have witnessed how Nvidia went from powering video games to revolutionizing artificial intelligence. According to an estimate by Forbes, there are an estimated 3,000 AI startups worldwide, and many of them are building on Nvidia's platform so we can see that the technological development around AI has been collaborative so far.



Stephen Hawking has already warned us about the risk of super intelligent AI by saying that the development of full artificial intelligence could spell the end of the human race and technology entrepreneur Elon Musk believes that AI is "our biggest existential threat".

Sci-fi loves AI

Sci-fi movies and TV series have given us HAL 9000, The Borg, V.I.K.I., Agent Smith, Skynet, Ultron and other

powerful intelligent machines that have tried to wipe off humanity from the planet Earth. In sci-fi literature, Isaac Asimov has talked about the problem of androids several times. The novel *Robots and Empire* and the short stories “Evidence” and “The Tercentenary Incident” describe robots crafted to fool people into believing that the robots are human. On the other hand, “The Bicentennial Man” and “— That Thou Art Mindful of Him” explore how the robots may change their interpretation of the Laws (Three Laws of Robotics) as they grow more sophisticated.

Noted American computer scientist and co-founder of Sun Microsystems, Bill Joy in his noteworthy article “Why The Future Doesn’t Need Us” argues that “Our most powerful 21st-century technologies — robotics, genetic

to the development of the N-bomb. In a nutshell, the nuclear bomb was a byproduct of competition and rivalry between world powers. We should have learned a lesson from the making of the first atomic bomb and the resulting arms race which followed but humans have the tendency of learning the hard way.

In the current scenario, we are armed with enormous computing power and have arrived at a juncture where new developments in physical sciences, deep understandings in genetics and enormous transformative power has made it possible for us to develop super-intelligent machines in the future.

The good, the bad and the ugly

I recently read an article in *New Scientist* about a drone that has been developed by Japan’s National Institute of Advanced Industrial Science and Technology, to transport pollen between flowers. The manually controlled drone is 4 centimeters wide and weighs 15 grams. When the drone flies onto a flower, pollen grains stick lightly to the gel and then rub off on the next flower visited.

In experiments, the drone was able to cross-pollinate Japanese lilies (*Lilium japonicum*). Moreover, the soft, flexible animal hairs did not damage the stamens or pistils when the drone landed on the flowers.

An influential science advisory group formed by the National Academy of Sciences and the National Academy of Medicine lent its support recently to the modification of human embryos to create genetic traits that can be passed down to future generations. However, researchers fear that the techniques used to prevent genetic diseases might also be used to enhance intelligence, for example, or to create people physically suited to particular tasks, like serving as soldiers.

The science research division of the U.S. Department of Defense (DOD) has published a report that talks about new ways to protect American assets by developing autonomous robotic systems and AI-powered weapons. The report highlights the tactical advantages of purely self-driven machines and humans and working together in the battlefield. The U.S. military also wants to develop AI cybersecurity software that can detect and react to threats faster than is now humanly possible.

There is no doubt that AI is the next big revolution of our time and we should ensure that it is not hijacked and corrupted by forces that see it as a tool of establishing control. A super-intelligent machine will be extremely good at accomplishing its goals but we have a problem if those goals aren’t aligned with ours. It can backfire if it starts seeing humans as a threat to solve task/problem say poverty by terminating people who are a burden on a society. □



engineering, and nanotech — are threatening to make humans an endangered species.” He rightly declares that we are being propelled into this new century with no plan, no control, no brakes.

Science as we know it has always grappled with the eternal question of ethics and morality. J. Robert Oppenheimer – the man behind the first atomic bomb was not naturally interested in politics but became painfully aware of what he perceived as the grave threat to western civilization from the Third Reich which led

SIX TECHNOLOGY TRENDS THAT ARE GOING TO REDEFINE AI

The future of AI can seem scary, but businesses can harness the power of AI to deliver better customer support and to treat customers more like humans

– Sidharth Shekhar

The market for artificial intelligence (AI) technologies is growing at a rapid pace and startups working in this particular area are getting acquired by the internet giants. There

is a significant increase in investment and adoption by enterprises. Forrester Research predicted a greater than 300% increase in investment in artificial intelligence in 2017 compared with 2016. IDC estimated that the AI market will grow from \$8 billion in 2016 to more than \$47 billion in 2020.

Coined by John MacCarthy in 1955 to describe a new computer science sub-discipline, "Artificial Intelligence" today includes a variety of technologies and tools.

Artificial intelligence (AI) is more relevant than ever and businesses are using AI to provide better services to customers. According to Gartner, "Artificial intelligence (AI), a topic of interest for over 20 years, is, at last, finding a rapid uptake as a tool to provide better customer service." The future of AI can seem scary, but businesses can harness the power of AI to deliver better customer support and to treat customers more like humans.

Let's take a look at top trends which are going to dominate AI in the coming years.

Natural language generation

Natural Language Generation is a subfield of artificial intelligence (AI)

which produces language as output on the basis of data input. This technology has been employed, primarily to improve human productivity, customer engagement, and operational efficiency.



With the explosion of big data enterprises are under tremendous pressure to interpret and analyze the data in real-time. A machine can communicate ideas from data at extraordinary scale and accuracy in a particularly articulate manner. NLG is the basic necessity for developing an AI technology which has the potential to understand and decipher the vast amount of data.

Intelligent apps

By 2018, Gartner expects most of the world's largest 200 companies to exploit intelligent apps and utilize the full toolkit of big data and analytics tools to refine their offers and improve customer experience.

Intelligent apps and digital assistants have the potential to transform the workplace by making everyday tasks easier. According to Gartner, intelligent apps are not limited to new digital assistants and in the future, every existing software category from security tooling to enterprise applications such as marketing or ERP will be powered with AI enabled capabilities.

Using AI, technology providers will focus on three areas — advanced analytics, AI-powered and increasingly autonomous business processes and AI-powered immersive, conversational and continuous interfaces.

Connected things

With the advent of IoT, the connected ecosystem will become intelligent things delivering the power of AI enabled systems everywhere including the home, office, factory floor, and medical facility.

As intelligent things evolve and become more popular, they will shift from a stand-alone to a collaborative model in which they will communicate with one another to accomplish tasks.

AI-optimized hardware

Like any other technology, AI will be having its own ecosystem and we will see Graphics processing units (GPU) and appliances designed specifically to efficiently run AI-oriented computational jobs. We all have

witnessed how Nvidia went from powering video games to revolutionizing artificial intelligence.

According to an estimate by Forbes, there are an estimated 3,000 AI startups worldwide, and many of them are building on Nvidia's platform. They're using Nvidia's GPUs to put AI into apps for trading stocks, shopping online and navigating drones. There's even an outfit called June that's using Nvidia's chips to make an AI-powered oven.

Deep learning platforms

Deep Learning has enabled many practical applications of machine learning. AI is the future of human civilization and with deep learning's help; AI has the potential to break new grounds.

Deep learning is a special type of machine learning consisting of artificial neural networks with multiple abstraction layers. Right now it is currently used in pattern recognition and classification applications supported by very large data sets.

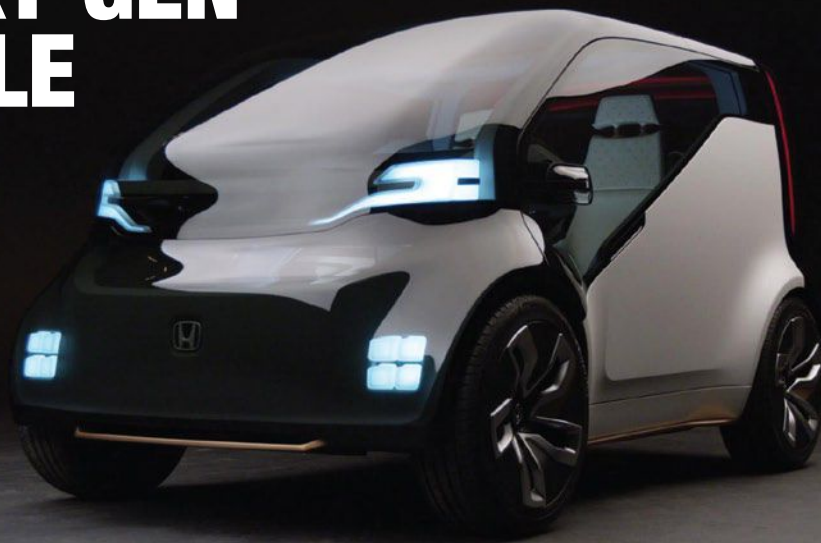
Virtual agents

We're all familiar with Siri, Google Now, Cortana and Alexa. From simple chatbots to advanced systems that can network with humans, virtual assistants are hot these days. They are currently used in customer service and support and as a smart home manager. □



ARTIFICIAL INTELLIGENCE IN THE NEXT-GEN AUTOMOBILE

While driverless cars have been around for a while, bringing them to the mainstream remains a challenge. Subtle advances in IoT networks connecting cars, their security and interoperability could be the right beginning



– Adeesh Sharma

The Consumer Electronics Show (CES) held in Las Vegas in the first week of Jan each year sets a nice pointer to technologies that are going to remain in focus in the new year. This year artificial intelligence (AI) with the associated technologies such as smart IoT sensors and increasingly powerful and seamless human machine interfaces (HMIs) proved to be the cynosure of all eyes that passed by.

Most global automobile companies are working on driverless cars that are based on continuous advances in computer vision and deep learning technologies. The Japanese automobile giant Honda showcased a tiny optical sensor that can fit in the rear view mirror of a car and measure throat movement of the passengers in the car. This helps to improve the clarity of conversations amongst passengers in noisy environments.

Mobility as a service can witness a dramatic transformation in experience with smart new experiences for both the driver and passengers. Hyundai showcased how you could step inside your car and choose your mood on arrival to say your office. By monitoring biometrics and facial expressions, the car controls temperature and lighting and even emits soothing fragrances to ensure you arrive either energised or relaxed to work. Hyundai also demoed a smart mobility chair that transports you from the vehicle to the home, where it docks into its base equipment. While this may sound a bit too

futuristic, but this chair actually controls music, video, lighting, appliances, security, etc in an intelligent and anticipatory fashion. For this, it takes rich feedback from networked sensors and actuators – all with voice control.

ChangHong showcased a contactless EEG brain control device which is embedded in a headrest. This device is smart enough to pick up brainwaves from a user to control the speed of a car in a video game. This is another example where smart sensors and human machine interactions, when combined with artificial intelligence technologies could create tangible advances in the way we drive, work and play.

Needless to mention here, such advances in AI depend heavily on the security, resilience and interoperability amongst different IoT networks. Many auto manufacturers have already demonstrated and are also working on advanced self-driving capabilities, however, the network that works in most cars still remains isolated with a myriad of protocols that require oodles of work to secure. To meet this end, automobile companies are working with the global IT giants to deliver advanced driver assistance systems (ADAS) and next-gen mobility experiences to revamp vehicle networks. For instance, Cisco is working with Hyundai to create a strong network backbone for their vehicles that would help Hyundai to simplify its network and seamlessly connect to other vehicles, through the cloud. □

GROWING IN A DIGITAL INDIA

The Growth Market Initiative by PCQuest & CyberMedia helps businesses learn how to understand, choose, implement - ideas, innovation and technology to grow their businesses. The initiative goes beyond providing strategic advice and delves into “HOW TO” actually apply it.

**Target Audience: 150+ Owners/CIOs/
IT decision makers of mid Enterprises**

Format: A full day event

KEY HIGHLIGHTS

- Keynote address -Growing in a Digital India.....
- Presenting Partner Slot
- Panel discussion: The need to digitally transform your business
- Big Data Analytics Session- Chalking Out the Right Analytics and Big Data Strategy
- Cloud Session- Why Adopting a Hybrid Cloud Strategy Makes More Sense
- Mobility Session-The Right Mobility Strategy for a Modern-Day Enterprise
- Digital Transformation
- Panel discussion: Securing Your IT Infrastructure Against New-Age Threats
- Demo: Using Open Source Tools in Cutting IT Infrastructure Costs
- Best Technology Awards
- Vote of thanks and networking over high tea



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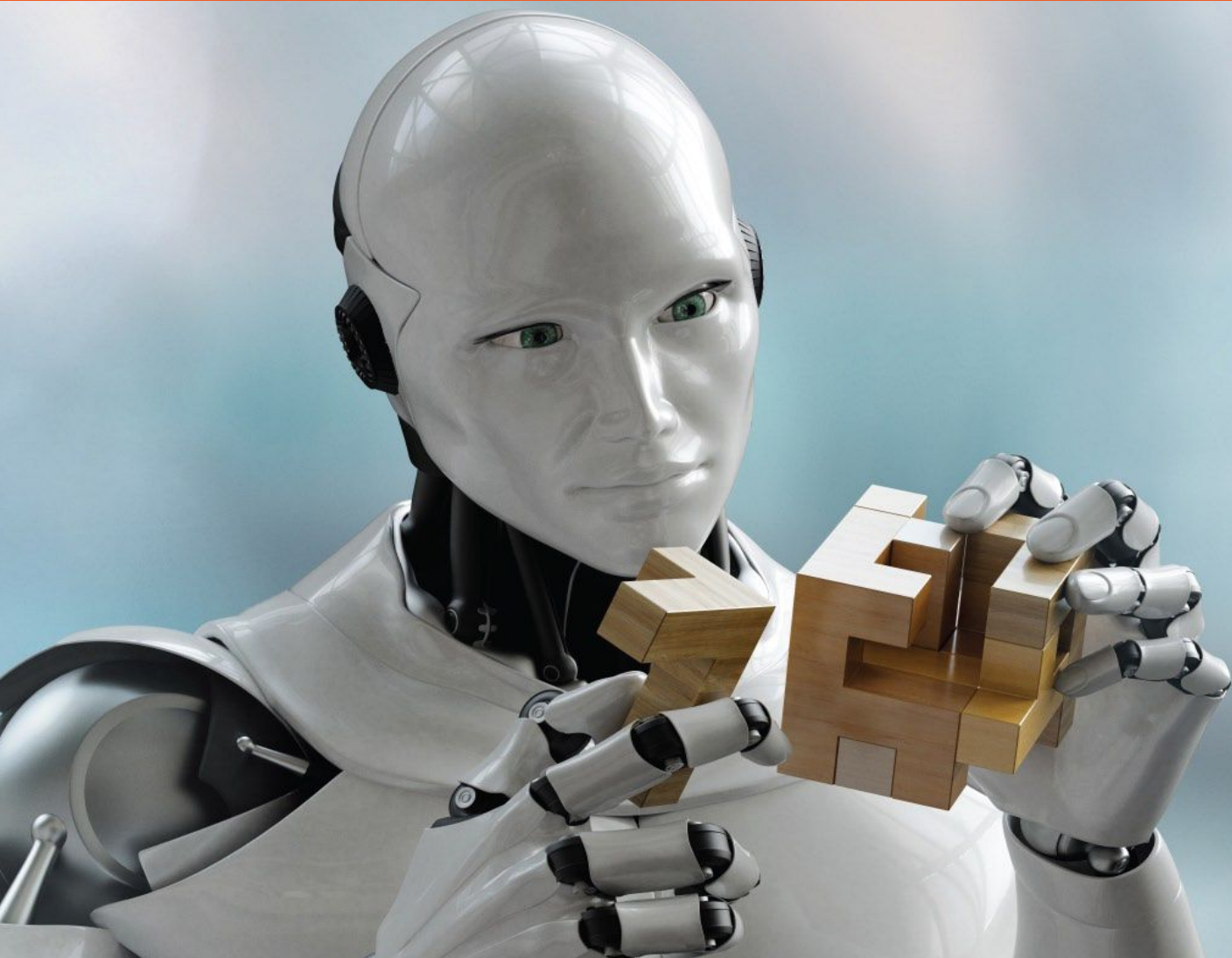


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WHY MANUFACTURING STANDS TO GAIN THE MOST THROUGH ARTIFICIAL INTELLIGENCE

With AI technologies finding their way into manufacturing, even leading economists from MIT are worried that technology is replacing jobs at a faster pace than creating new ones

– Adeesh Sharma

Siri on the iPhone, Cortana on Windows, Alexa, self-driving cars, and face recognition on Facebook photos, these are all examples of how Artificial Intelligence (AI) is already having a profound impact on human lives. This trend is also

impacting manufacturing, albeit on a smaller scale now, with robots being increasingly used to replace humans in factories across the globe, from the US, Europe, Japan, China and Taiwan. Foxconn has already replaced 60,000 humans with robots in its factories,

after developing artificial intelligence solutions for its manufacturing processes. Such a strategy they insist shall help them offset increasing labour costs in labour-intensive countries such as China. Also, with AI technologies finding their way into manufacturing, leading economists from MIT are worried that technology is replacing jobs at a faster pace than creating new ones, which could lead to higher unemployment over a short-term period. Recently, Bill Gates has commented on robots paying taxes in case they are only intended to replace humans in jobs. Well, looks preposterous right now, but who knows! In the past, a Japanese company Deep Knowledge has even appointed a robot with deep AI skills as one of its directors as they feel it has the ability to predict market trends better than humans!

Robots replace humans in manufacturing

Foxconn is also working with Google to develop advanced artificial intelligence based robots to help itself transform into a high-margin capital intensive products based manufacturing company. Japan has always been a leader in robotics technology and is working aggressively towards developing atleast 30 million robots to create a workforce of robots and bring back manufacturing to its shores on more cost-effective terms in the longer run.

Artificial intelligence can help robots become more programmable and flexible so that they could be put to more uses than one. In the past, we've only seen robots that have been manufactured to do one type of job but all this is set to change with Google developing an operating system on the lines of Android that lets you interoperate a robotic platform across industries, thus reducing costs.

While large scale use of artificial intelligence and robotics in manufacturing is bound to cut jobs in the short term, the advancement in technology is bound to reduce costs, make the processes more efficient and accurate, thus benefiting society in more ways than one. With the use of smart and intelligent technologies such as IoT, artificial intelligence and big data, manufacturing plants can quickly exchange large sets of data and gain valuable insights from it. This improves collaboration amongst the workforce across the manufacturing chain at a faster pace and also helps in harnessing expertise to further improve upon processes.

Interconnected machine parts and IoT improve efficiency

Likewise, interconnected machine parts and machines

that communicate with each other, through the use of IoT technologies, help identify problems faster and facilitate remedial measures thus limiting damage and reducing expenses. Such an approach also limits human intervention, prevents breakdown of machinery thus eliminating downtime in production.

From a consumer perspective, with production flaws being corrected at the manufacturing stage itself, there is little possibility of a defective product reaching leaving the shop floor and being delivered to a customer. A self-reporting machine could also foresee minor defects in otherwise larger products such as cars before they reach customers and avoid embarrassing and costly propositions such as recall of cars on a larger scale.

Impact of AI more profound on certain industry verticals

If we look at industry verticals such as mining and metallurgy, oil exploration, infrastructure and utilities, any business downtime there is extremely expensive and impacts the society at large. Therefore, the more such intelligent technologies are used and more the activities under these industries are monitored remotely, the more improved is the ability to diagnose and repair faults before the damage turns critical.

It also becomes easier to manage for operations teams when entire business data is integrated and analytics can be done in an automated fashion. Similarly, the research and development teams also find it easy to interact and exchange information with manufacturing facility and the quality control teams. While sensors and digital technologies have been extensively used in outdoor information gathering, the use of artificial intelligence techniques makes their analysis more meaningful.

The security of data exchange becomes paramount here and with the use of more and more cloud based platforms, it is increasingly in focus. Add IoT solutions to the mix and industrial automation is taken to the next level with supply chain management systems and shop floor activities being linked to provide a more smart and optimised plant with better control over productivity and operational efficiency. All this together helps in adding more value to the products offered to the customers in the longer run. This is just the tip of the iceberg as far as possibility of using artificial intelligence in manufacturing is concerned. There interesting times ahead and let's wait and see how much impact it shall have on our lives. □

ROBOT CONTENT VS REAL CONTENT: CAN JOURNALISM SURVIVE AI?

We are living in an era where automation is not limited to high-end engineering and medical sector but has shifted to writing as well. Journalism is the new sector in which robots are being used for generating quantitative content

— Sidharth Shekhar

The Nomura Research Institute (NRI) published in collaboration with Oxford University a shocking report in December last year saying that 49 percent of jobs in Japan will technically be able to be performed by AI-powered robots within 10 to 20 years. The report predicts that robots will be able to replace workers such as reception clerks, bank tellers, security guards, assembly workers, supermarket clerks,

delivery workers, train operators, cleaners and those in many other unskilled jobs.

The report also lists jobs that will survive the era of robots — doctors and health care staff, artists, musicians, actors, critics, stylists, lawyers, teachers, TV broadcasters, photographers, and writers.

The NRI report does not use the word “journalists,” but are we sure? Aren’t we on the doorstep of an era



when human beings will no longer be necessary to do a journalist's job?

We are living in an era where automation is not limited to high-end engineering and medical sector but has shifted to writing as well. Journalism is the new sector in which robots are being used for generating quantitative content.

Robot journalism may sound very futuristic but there is no doubt about the role it's going to play in our lives.

We already know about Wordsmith software developed by the Associated Press to automatically generate news stories about college sports. This software has been created by North Carolina-based Automated Insights.

Wordsmith works on algorithms to create content. The AP — which is also an investor in Automated Insights — already uses Wordsmith to generate stories on quarterly earnings reports of various corporate firms. The Associated Press has also announced that it will use Wordsmith, to generate up to 4,400 corporate earning reports per quarter, more than ten times the number of reports produced by human reporters. News organizations are experimenting heavily with robot

journalism, using computer programs to transform data into news stories or multimedia presentations.

AI and robots can steal thousands of preprogrammed jobs as it has the ability to process massive databases in a couple of minutes in a preprogrammed way.

It is logical to conclude that reporting of routine governmental announcements, mundane statistics, press releases will be taken over by AI and robots. On the other hand, humans will still perform investigative reporting, provide deep analysis and produce profile stories with rich human emotions.

AI may think it does not need an analytical story, but a human reporter can find an important new economic trend worthy of deep analysis.

There is no reason to be worried about the rise of robot journalism as they are purely into structured and quantitative data analysis and not into the mainstream journalism related to human emotion or opinion.

Automation leads to job loss but this is not the case here. On the contrary, automation is freeing up the reporters from digging deep into hard numbers. It will be more problematic for us when a machine with highly developed and ever expanding AI, enters into other fields of journalism like editorials, comparative analysis, and human interest stories. If humans, with the aid of espionage and technology, were capable of developing the machine which destroyed the Enigma, then I don't have any doubts regarding our future, where a sizeable amount of human workload will be transferred to the robots.

Recently, Xiao Nan – a robot reporter created its first article for Chinese media outlet Southern Metropolis Daily. The machine produced an article (300 words) on the subject of the Spring Festival travel rush – the largest annual human migration where millions of employees in China travel the huge nation to get home to their families for Chinese New Year.

The robot was developed by Wan Xiaojun, a professor at Peking University who is working on developing several AI machines.

However, humans have motivation and passion which AI lack for now.

Nowadays it is said that AI can conquer human intelligence. In fact, AI has won in such games as chess, Japanese shogi, and poker.

To conclude, we can be sure of one thing that AI is there to help journalists do more investigative work by analyzing massive sets of data and pointing to the most relevant dataset. While this technology can improve efficiencies in newsrooms, what will the future of news look like when it becomes powered by AI? We will soon find out. □



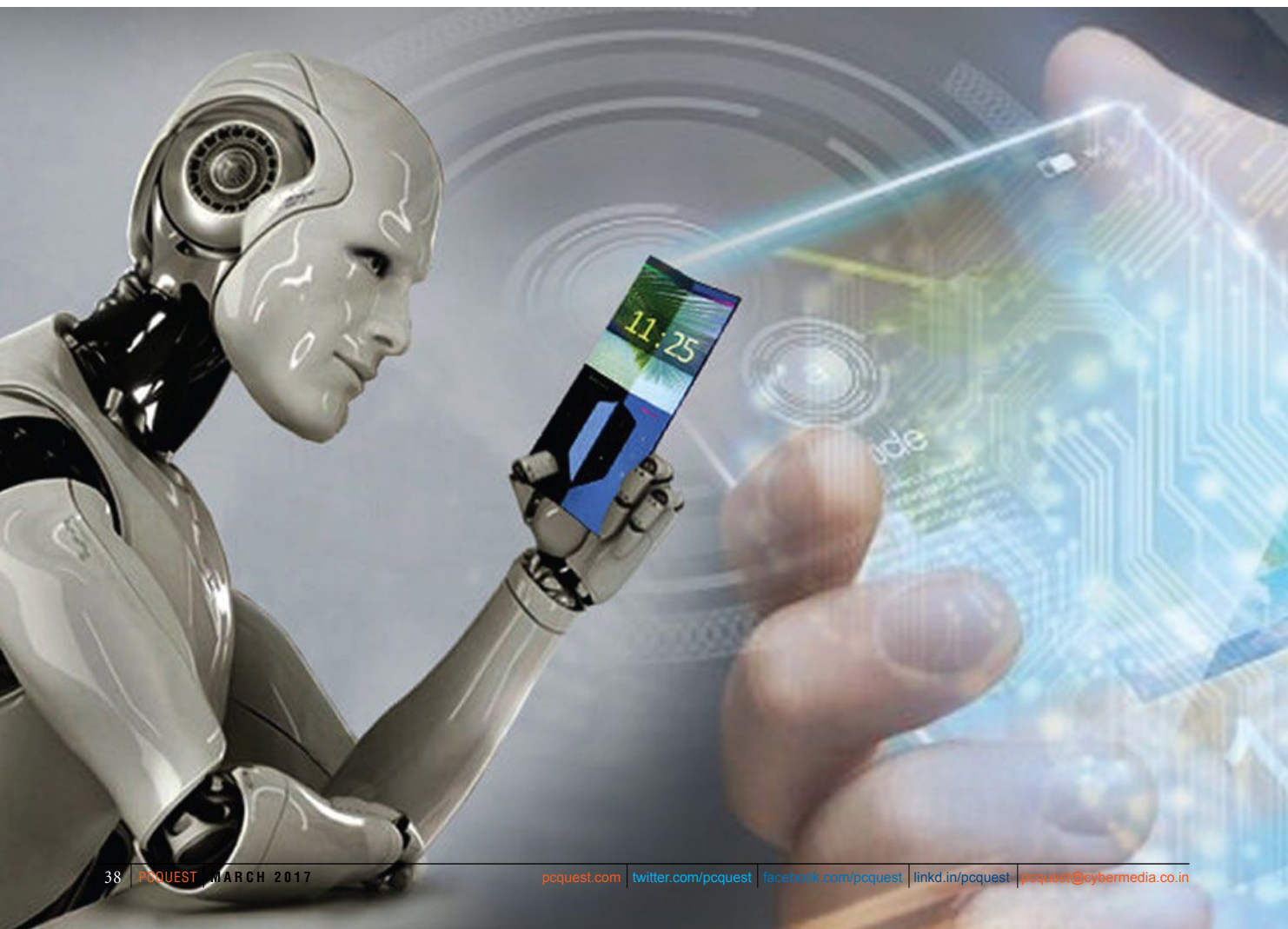
SMARTPHONE AND AI: TRANSFORMING OUR DIGITAL LIFE

Smartphones and artificial intelligence, when used together, have made it possible to develop intelligent machines that impact our lives in more ways than one

— Ashok Pandey

Artificial Intelligence has long been a fanciful sci-fi staple for Hollywood directors, but now that time is not far when machines will be having the power and potential to respond to our commands intelligently. Smartphone and current developments in the Artificial Intelligence (AI) have made it possible for us to develop intelligent machines.

We have seen how Apple has improved on their voice assistant Siri and now it is more intelligent. Now, every major technology company is involved in developing their own intelligent voice assistants to power their connected products. Android has Google Now and Windows has Cortana. Even Samsung and Nokia are coming out with their intelligent personal assistant.



In the future, AI is going to be integrated with our gadgets like smartphones, tablets, and laptops and this integration will transform these devices into an interactive tool to help the user to make decisions and be productive at the same time. Let's understand and analyse the relationship between AI and smartphone...

Deep learning

Deep learning is one of the branches of AI technology and unknowingly, we use deep learning technology in our daily life. Face recognition and voice recognition technologies employ deep learning to recognise you. Companies like Google and Facebook are using them for a very long. This technology is focused on mimicking the activity of neurons in the neocortex of the human brain. It's an essential branch to develop a truly intelligent machine. Current developments in the area have drastically enhanced programs for speech transcription, image recognition, translation and more. This is helping computer

program to learn to do almost anything that a human can do (eventually).

The Chatbots

From last many years, chatbots have existed in this world, but sadly many people consider them as a small program to make the interaction funny. However, it plays an important role in AI technology. It also uses deep learning technology for better results. Chatbot capabilities are expanding to effectively store, recall and synthesize information. The future chatbots are expected to become more capable of completing complex tasks than simple conversation.

Imagine when chatbots would be able to access multiple information centers. You ask a query; it will dig all the centres and bring back relevant results in a fraction of the time. Especially, call centers would get greater benefits, as currently customers struggle with IVR and then reach to required destination, while a smart bot can answers a call and quickly connect to a representative or a computer. Constant advancement in the technology makes AI more effective as well as brings it closer humans impacting our daily lives.

Though smartphones are smart, artificial intelligence is turning them smarter.

Find your destination

We have been seeing maps from quite a long time, but intelligent bots can predict where you want to go next, which obviously depends on your daily habits and recent research. It can warn you if traffic is increasing on the route which you took everyday as well as help you to find another way to reach early by avoiding traffic mess. The intelligent system can make decisions based on your life habits.

Digital assistance

We all know about Siri, Google Now and Cortana. These are changing our future. With a simple voice command we can search for our favorite location, celebrity, food and more. Planning for a movie! Get help from these intelligent voice assistants. They will tell you the latest release, nearby cinemas plus you can book tickets as well. They talk to you like your buddies, you can talk to them when you feel lonely or in stress. It sounds freaky, but you are using your phone day and night. Its already an important part of your life, so it can become your friend, assisting you with your tasks.

These are some of the examples which we can experience today, but future is holding lots of more developments and soon we all become witness to more strong and intelligent systems. □



ARE THERE INDUSTRIES INFLUENCED BY AI & MACHINE LEARNING IN 2017?

A renewed interest in machine learning is emerging now, having similar factors that have been instrumental in the recent popularity of data mining and Bayesian analysis. This sees growing volumes and assortments of available data, optimized computational processing, many domains and affordable data storage.

– By Mr. Sayantam Day, Sr. Director, Engineering, 3Pillar Global

Modern technology has influenced civilization in every turn of a century. Humans have always signified progress with their relentless endeavours to make life simpler than before. Thanks to the new technology, the 20th and 21st centuries have seen a number of advancements that have revolutionized our daily lives. Envisioning a life without some of these facilitators has become a difficult task due to our reliance on them and one such advancement is machine learning.

Machine learning is a branch of artificial intelligence that aims to simulate intelligent abilities of humans by machines. It is a set of algorithms that trains a predictive model by learning from the information hidden inside an existing dataset. The trained model is then validated and tested to discover the accuracy levels, which result in a smart predictive model. The model is built in such a way that it gets smarter over a period of time.

With the emergence of new computing technologies, machine learning today is not even a reflection of the past. While it was born from pattern identification and the basic theory that computers can learn to perform specific tasks without the use of external programs, researchers specializing in artificial intelligence wanted to see the extent to which computer's intelligence could be augmented. The iterative aspect of machine learning is essential to the success of the technology, as models are exposed to new data on a daily basis and are able to independently mould itself around it. This works through learning from previous computations to produce reliable, repeatable decisions and results. It's a science that we have often come across – and one that's gaining fresh momentum.

A renewed interest in machine learning is emerging now, having similar factors that have been instrumental in the recent popularity of data mining and Bayesian analysis. This sees growing volumes and assortments of available data, optimized computational processing, many domains and affordable data storage.

Machine learning has had a consistently huge impact in many domains and functions, sometimes without us really being aware that machine learning is at work. There are a multitude of use cases in real life where machine learning has worked very well, such as:

Financial services

Banks and other businesses in the financial industry incorporate machine learning technology for two crucial purposes: to cull out important insights in data and to detect/prevent early signs of fraud. The insights can classify investment opportunities, helping investors know the ideal moment to trade. Machine learning, along with data mining, can also single out clients with high-risk profiles and use cyber surveillance to pinpoint warning signs of fraud.

Government

Government functions such as public safety and utilities have a centralized need for machine learning owing to



their multiple sources of data that need to be mined for insights. Machine learning can also assist in fraud detection and minimize identity theft.

Healthcare

Machine learning is a fast-growing enabler in the health care industry, owing to the initiation of wearable devices and sensors which use data to assess a patient's health in real time. This technology can also facilitate medical experts in collating data to identify trends and red flags that lead to improved diagnoses and treatment, as well as provide preventative medical care.

Marketing and sales

E-commerce portals are using machine learning to analyze consumers' purchase history and promote

other items that they'll be interested in. The ability to encapsulate data, analyze it and use it to personalize the shopping experience (or implement a marketing campaign) is the future driver of progress in retail.

Transportation

Data analysis and model-based aspects of machine learning are important tools for delivery companies and those that operate in the fields of public and private transportation. Today, analyzing data to identify patterns and trends form the crux of machine learning in the transportation industry, which relies on developing efficient routes and foreseeing potential problems to increase productivity.

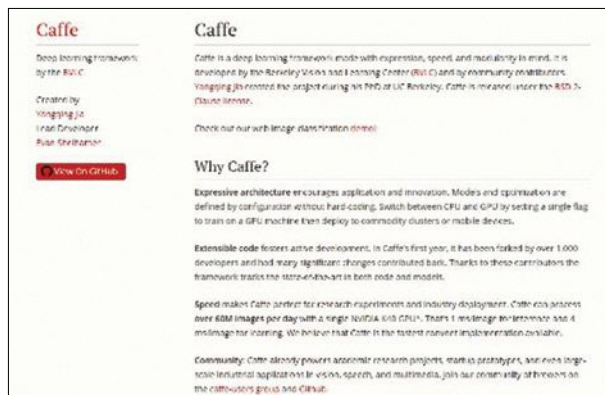
Currently, the size of Machine Learning as a Service Market is estimated to grow from \$613.4 million in 2016 to \$3.76 billion USD by 2021, at a Compound Annual Growth Rate (CAGR) of 43.7% from 2016 to 2021. Such data paints a heartening picture for machine learning to play a very real part in growing various sections of the market and to facilitate the next step in the evolution of technology-powered businesses and products. □

15 OPEN SOURCE ARTIFICIAL INTELLIGENCE TOOLS FOR DEVELOPERS

Here we present a list of useful Artificial Intelligence tools that let you build next-gen algorithms

– Raj Kumar Maurya

Al has become the need of the day today. Big companies like IBM, Google, Microsoft, Facebook and Amazon are investing lots of money in the R&D to take the AI to the next level. Even companies like Samsung last year took over a start-up to roll out its AI assistant Bixby. Given the level of interest, here are some tools for Building the next generation of AI algorithms.

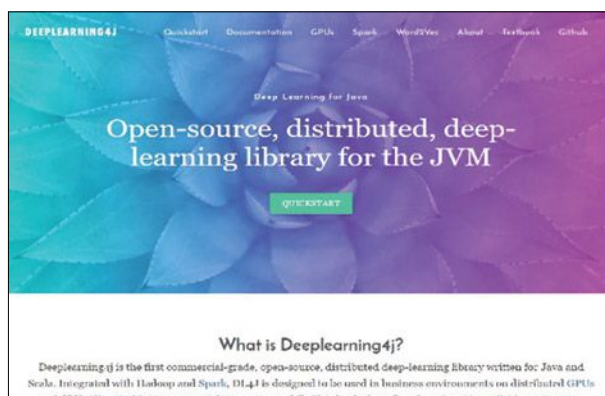


Caffe

Caffe is a deep learning framework made with expression, speed and modularity in mind. It is managed by the Berkeley Vision and Learning Center (BVLC), and companies like NVIDIA and Amazon have made grants to support its development. Its Expressive architecture encourages application and innovation. Models and optimization are defined by configuration without hard-coding. You can switch between CPU and GPU by setting a single flag to train on a GPU machine and then deploy to commodity clusters or mobile devices.

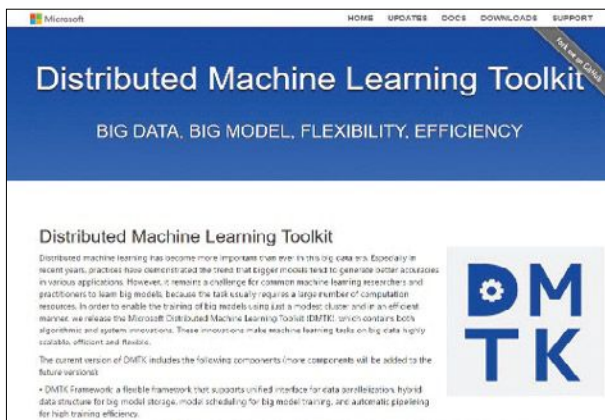
Microsoft Cognitive Toolkit

The Microsoft Cognitive Toolkit—previously known as CNTK—empowers you to harness the intelligence within massive datasets through deep learning by providing uncompromised scaling, speed and accuracy with commercial-grade quality and compatibility with the programming languages and algorithms you already use. It boasts outstanding performance, whether it is running on a system with only CPUs, a single GPU, multiple GPUs or multiple machines with multiple GPUs.



Deeplearning4j

Deeplearning4j is the first commercial-grade, open-source, distributed deep-learning library written for Java and Scala. Integrated with Hadoop and Spark, DL4J is designed to be used in business environments on distributed GPUs and CPUs. Skymind is its commercial support arm.



Distributed Machine Learning Toolkit

Distributed machine learning has become more important than ever in this big data era. Especially in recent years, practices have demonstrated the trend that more training data and bigger models tend to generate better accuracies in various applications. It consists of three key components: the DMTK framework, the LightLDA topic model algorithm and the Distributed (Multisense) Word Embedding algorithm.

H2O

H2O was written from scratch in Java and seamlessly integrates with the most popular open source products like Apache Hadoop and Spark to give customers the flexibility to solve their most challenging data problems. Set up and get started quickly using either H2O's intuitive web-based flow graphical user interface or familiar programming environments like R, Python, Java, Scala, JSON, and through powerful APIs. Models can be visually inspected during training, which is unique to H2O.

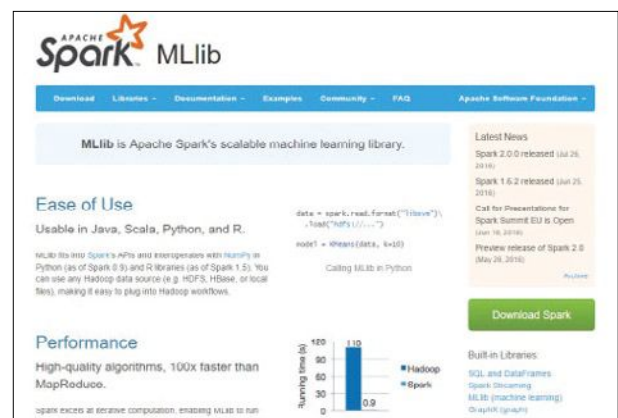


Mahout

Mahout is an open source machine learning framework. It offers three major features: A simple and extensible programming environment and framework for building scalable algorithms, premade algorithms for tools like Spark and H2O and a vector-math experimentation environment called Samsara. Companies using Mahout include Adobe, Accenture, Foursquare, Intel, LinkedIn, Twitter, Yahoo and many others. Professional support is available through third parties listed on the website.

MLlib

MLlib fits into Spark's APIs and interoperates with NumPy in Python and R libraries (as of Spark 1.5). You can use any Hadoop data source (e.g. HDFS, HBase, or local files), making it easy to plug into Hadoop workflows. It includes a host of machine learning algorithms for classification, regression, decision trees, recommendation, clustering, topic modeling, feature transformations, model evaluation, ML pipeline construction, ML persistence, survival analysis, frequent itemset and sequential pattern mining, distributed linear algebra and statistics.





NuPIC

NuPIC is an open source artificial intelligence project based on a theory called Hierarchical Temporal Memory, or HTM. HTM is not a Deep Learning or Machine Learning technology. It is a machine intelligence framework strictly based on neuroscience and the physiology and interaction of pyramidal neurons in the neocortex of the mammalian brain. Essentially, HTM is an attempt to create a computer system modeled after the human neocortex. The goal is to create machines that “approach or exceed human level performance for many cognitive tasks.”

OpenNN

OpenNN is an open source class library written in C++ programming language which implements neural networks, the main area of machine learning research. The main advantage of OpenNN is its high performance. It is developed in C++ for better memory management and higher processing speed and implements CPU parallelization by means of OpenMP and GPU acceleration with CUDA.



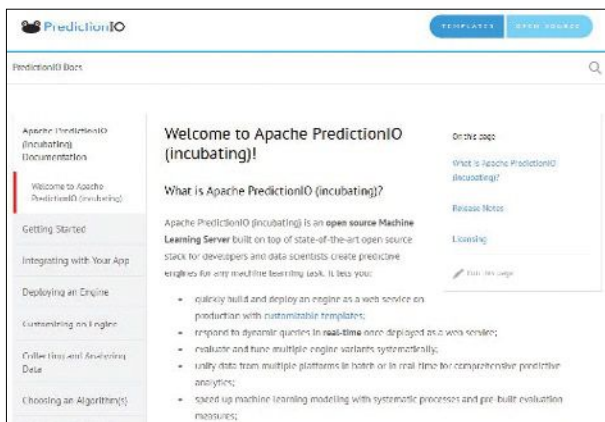
OpenCyc

The OpenCyc Platform is your gateway to the full power of Cyc, the world's largest and most complete general knowledge base and commonsense reasoning engine. OpenCyc contains hundreds of thousands of Cyc terms organized in a carefully designed ontology. Cycorp offers this ontology at no cost and encourages you to make use of and extend, this ontology rather than starting your own from scratch. OpenCyc can be used as the basis of a wide variety of intelligent applications such as rich domain modeling, semantic data integration, text understanding, domain-specific expert systems and game AIs.

Oryx 2

Oryx 2 is a realization of the lambda architecture built on Apache Spark and Apache Kafka, but with specialization for real-time large-scale machine learning. It is a framework for building applications but also includes packaged, end-to-end applications for collaborative filtering, classification, regression and clustering.





PredictionIO

Apache PredictionIO (incubating) is an open source Machine Learning Server built on top of state-of-the-art open source stack for developers and data scientists create predictive engines for any machine learning task. It helps users create predictive engines with machine learning capabilities that can be used to deploy Web services that respond to dynamic queries in real time.

SystemML

Apache SystemML provides an optimal workplace for machine learning using big data. It can be run on top of Apache Spark, where it automatically scales your data, line by line, determining whether your code should be run on the driver or an Apache Spark cluster.

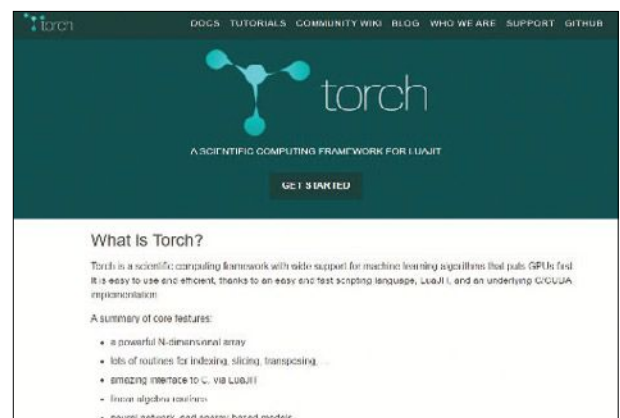


TensorFlow

TensorFlow is an open source software library for numerical computation using data flow graphs. Nodes in the graph represent mathematical operations, while the graph edges represent the multidimensional data arrays (tensors) communicated between them. The flexible architecture allows you to deploy computation to one or more CPUs or GPUs in a desktop, server, or mobile device with a single API.

Torch

The torch is a scientific computing framework with wide support for machine learning algorithms that puts GPUs first. It is easy to use and efficient, thanks to an easy and fast scripting language, LuaJIT, and an underlying C/CUDA implementation. The torch comes with a large ecosystem of community-driven packages in machine learning, computer vision, signal processing, parallel processing, image, video, audio, and networking among others, and builds on top of the Lua community.



CONTENT INJECTION VULNERABILITY IN WORDPRESS 4.7.0

According to a blog on Sucuri, they discovered a severe content injection (privilege escalation) vulnerability affecting the REST API on WordPress. Here we present the details



– Adeesh Sharma

This vulnerability allows an unauthenticated user to modify the content of any post or page within a WordPress site. A fix for this was silently included on version 4.7.2 along with other less severe issues.

Who's at risk

This privilege escalation vulnerability affects the WordPress REST API that was recently added and enabled by default on WordPress 4.7.0. One of these REST endpoints allows access (via the API) to view, edit, delete and create posts. Within this particular endpoint, a subtle bug allows visitors to edit any post on the site. The REST API is enabled by default on all sites using WordPress 4.7.0 or 4.7.1. If your website is on these versions of WordPress then it is currently vulnerable to this bug.

Here's how it works

Look up at `./wp-includes/rest-api/endpoints/class-wp-rest-posts-controller.php`

```
80 register_rest_route( $this->namespace, '/' . $this->rest_base .  
81     array(  
82         'methods' => WP_REST_Server::READABLE,  
83         'callback' => array( $this, 'get_item' ),  
84         'permission_callback' => array( $this, 'get_item_permissions' ),  
85         'args' => array(  
86             'context' => $this->get_context_param( array( 'default' => 'view' ) ),  
87             'password' => array(  
88                 'description' => __( 'The password for the post.' ),  
89                 'type' => 'string',  
90             ),  
91         ),  
92     ),  
93     array(  
94         'methods' => WP_REST_Server::EDITABLE,  
95         'callback' => array( $this, 'update_item' ),  
96         'permission_callback' => array( $this, 'update_item_permissions' ),  
97         'args' => $this->get_endpoint_args_for_item_schema(),  
98     ),  
99     array(  
100         'methods' => WP_REST_Server::DELETABLE,  
101         'callback' => array( $this, 'delete_item' ),  
102         'permission_callback' => array( $this, 'delete_item_permissions' ),  
103     )
```


There are a couple of things to notice here. The registered route is designed to populate the ID request parameter with digits. For example, if you are sending a request to `/wp-json/wp/v2/posts/1234` – the ID parameter would be set to 1234.

This behavior alone could be a good way to prevent attackers from crafting malicious ID values, but when looking at how the REST API manages access, you quickly discover that it prioritizes `$_GET` and `$_POST` values over the ones generated by the route's regular expression. This makes it possible for an attacker to send a request like: `/wp-json/wp/v2/posts/1234?id=12345helloworld` – which would assign `12345helloworld` to the ID parameter – which now contains more than just digits.

Investigating further, look at the various callbacks (in the screenshot above) and one of them kept attention: the `update_item` and its permission check method `update_item_permissions_check`.

```

309  /**
310   * Checks if a given request has access to update a post.
311   *
312   * @since 4.7.0
313   * @access public
314   *
315   * @param WP_REST_Request $request Full details about the request.
316   * @return true|WP_Error True if the request has access to update
317   */
318  public function update_item_permissions_check( $request ) {
319
320      $post = get_post( $request['id'] );
321      $post_type = get_post_type_object( $this->post_type );
322
323      if ( ! $post && ! $this->check_update_permission( $post ) ) {
324          return new WP_Error( 'rest_cannot_edit', __( 'Sorry, you are not allowed to edit this item.' ) );
325      }
326
327      if ( ! empty( $request['author'] ) && get_current_user_id() != $request['author'] ) {
328          return new WP_Error( 'rest_cannot_edit_others', __( 'Sorry, you are not allowed to edit other user\'s posts.' ) );
329      }
330
331      if ( ! empty( $request['sticky'] ) && ! current_user_can( $post_type->cap_manage_sticky_posts ) ) {
332          return new WP_Error( 'rest_cannot_assign_sticky', __( 'Sorry, you are not allowed to assign sticky posts.' ) );
333      }
334
335      if ( ! $this->check_assign_terms_permission( $request ) ) {
336          return new WP_Error( 'rest_cannot_assign_term', __( 'Sorry, you are not allowed to assign terms to posts.' ) );
337      }
338
339      return true;
340  }

```

In short, it passes the alphanumeric ID value directly to the `get_post()` function. This function validates the request by checking if the post actually exists and whether the user has permission to edit this post. This is a curious way of sanitizing the request. If we send an ID that doesn't have a corresponding post, we can just pass through the permission check and be allowed to continue executing requests to the `update_item` method!

But what could cause `get_post()` to fail at finding a post (other than a non-existent ID)? It was found that the `get_instance()` static method in `wp_posts` was used to grab posts.

```
210     public static function get_instance( $post_id ) {
211         global $wpdb;
212
213         if ( ! is_numeric( $post_id ) || $post_id < 0 )
214             return false;
215     }
216 }
```

As you can see from the code, it would basically fail on any input that isn't all made of numeric characters – so 123ABC would fail.

For an attacker, this means that WordPress (thinking it's a user with enough privilege to edit this post) would run the `update_item` method.

Let's check what this method does.

```

613  /**
614   * Updates a single post.
615   *
616   * @since 4.7.0
617   * @access public
618   *
619   * @param WP_REST_Request $request Full detail
620   * @return WP_REST_Response|WP_Error Response
621   */
622  public function update_item( $request ) {
623      $id = (int) $request['id'];
624      $post = get_post( $id );
625
626      if ( empty( $id ) || empty( $post->ID ) ||
627          return new WP_Error( 'rest_post_invali
628      )
629
630      $post = $this->prepare_item_for_database(
631
632      if ( is_wp_error( $post ) ) {
633          return $post;
634      }
635
636      // convert the post object to an array, ot
637      $post_id = wp_update_post( wp_slash( arra
638

```

There is a very subtle, yet important detail in that last screenshot – WordPress casts the ID parameter to an integer before passing it to `get_post()`!

This is an issue because of the way PHP does type comparisons and conversions. For example, one can see that the following snippet would return 123:

```
php > var_dump((int)"1231")
php shell code:1:
int(123)
php > #
```

This leads to a very dangerous situation where an attacker could submit a request like `/wp-json/wp/v2/posts/123?id=456ABC` to change the post whose ID is 456!

Due to this type-juggling issue, it is then possible for an attacker to change the content of any post or page on a victim's site. From there, they can add plugin-specific shortcodes to exploit vulnerabilities (that would otherwise be restricted to contributor roles), infect the site content with an SEO spam campaign, or inject ads, etc.

Depending on the plugins enabled on the site, even PHP code could be executed very easily. ☐

PHP 7 VS HHVM: WHICH ONE'S CUT FOR A WORDPRESS CMS?

While PHP is still considered the favorite scripting language of many web developers, a virtual tool capable of executing PHP code called Hip Hop Virtual Machine (HHVM) has been giving tough competition

– Adeesh Sharma

The users of both platforms argue superiority of one over the other, the choice for someone starting new would depend on his familiarity with either of the platforms. Let's discuss the pros and cons associated with both.



be installed on the server before you can use it. Also, it converts PHP code into Hip Hop bytecode before translating it into machine code and executing it. This results in filtering out of the inefficiencies of the PHP code and thus results in improved performance.

The request handling limit for PHP 7 is almost

How HHVM was conceived

HHVM was developed by Facebook in 2010 and released for public next year. The idea behind its development was to reduce server resources and thereby provide a faster experience to Facebook users. This it does by quickly converting PHP code into machine code, using a Just in Time compiler. The use of a JIT compiler provides a massive boost in performance over the erstwhile PHP 5. Moreover, because of Facebook support there's a huge community of developers out there working to constantly improve it so you are never short on support. HHVM requires lesser memory space to execute requests and it's actually quite easy for any developer to install and work with HHVM. However, there are a few negatives associated with HHVM that you should be aware of. You need to first convert custom extension before you can add to them to your website. Also, it does not support all WordPress themes and Plugins and requires overall more memory than PHP 7 so it should not be used on servers with less than 2 GB RAM.

Comparing the two: PHP 7 Vs HHVM

Undoubtedly, PHP 7 provides a much improved performance over PHP 5. It directly interprets and executes code on the server using the standard PHP interpreter, which is free for all. The generated HTML code is transmitted to the client and displayed on the screen. The PHP interpreter and HHVM both execute PHP code, so the actual code writing effort is the same. HHVM has to

double that of PHP 5.6 and also it responds to request much quicker. Also, by modifying how it handles data internally, PHP 7 is much more memory efficient as compared to the previous PHP version. However, PHP is outmatched by HHVM in many performance metrics and isn't ideal for very high traffic websites such as Facebook. Moreover, some themes and plugins are not yet compatible with PHP 7.

Which one should you eventually choose?

There are no definitive benchmark standards that one can quote to claim which out of the two: PHP 7 and HHVM is better. However, one thing is for sure: both vastly outperform the older versions of PHP.

On WordPress sites, it has been found that those using HHVM consume fewer CPU resources which allows for more transactions per second for a high number of concurrent requests. So, what you choose depends on your capacity and requirements. For websites that receive huge concurrent hits, HHVM may be the better option provided you have a multi-core server to handle it.

Experienced developers would feel a lot more familiar with working on PHP 7 as there's hardly any learning curve to be overcome. However, when a website is bombarded by multiple requests, HHVM consumes less memory than PHP 7. Whatever you eventually choose would atleast help your website perform better as opposed to a poorly performing website on an older PHP platform. □

A black and white photograph of a man in a dark suit and striped shirt, holding a Dataquest magazine. The magazine cover features the Dataquest logo and various charts and graphs. The background is slightly blurred, showing what appears to be a bookshelf.

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MAJORITY OF BUSINESSES AND ECONOMIES ARE NOT READY FOR DIGITAL PLATFORMS, ACCENTURE RESEARCH SHOWS

Research released by Accenture reveals that despite the potential for small and traditional businesses to become successful digital platform companies, as few as 10 percent of new start-ups focused on digital platform business models will become profitable independent entities in the coming years

– Nijhum Rudra

The analysis also reveals that China, India and the U.S. will dominate the platform economy by 2020, and that the gulf between countries will increase. To help bridge this gap, the report outlines five critical steps businesses and governments can take to succeed.

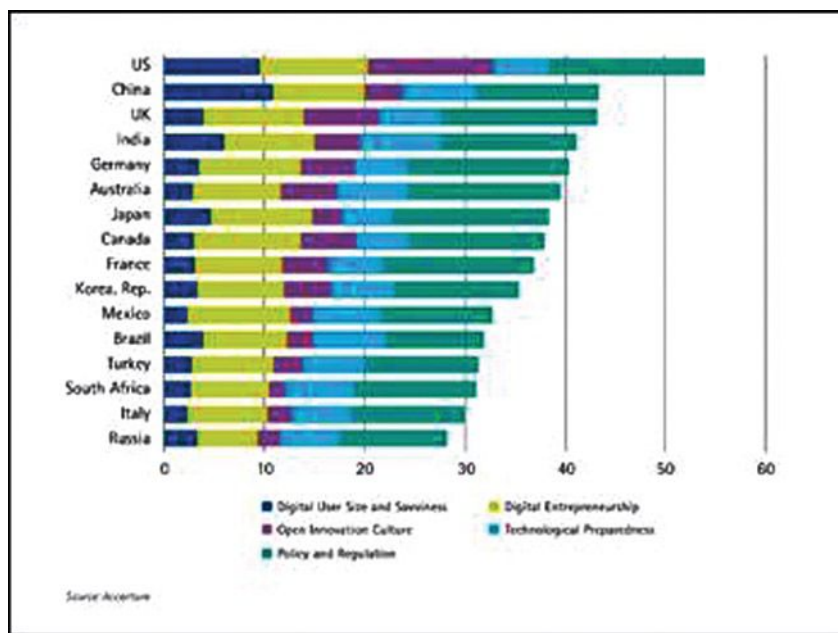
Accenture's report *Five Ways to Win with Digital Platforms*, published in collaboration with the G20 Young Entrepreneurs' Alliance, assesses the ability of 16 G20 economies to support the flourishing of digital platforms. It shows that the UK and Germany join China, India and the U.S. at the top of the Accenture Platform Readiness Index (see figure 1), but other emerging markets and European economies are predicted to lag behind, lacking sufficient business and socio-economic enabling conditions.

"When you think of digital platforms, think of China and India as much as the U.S. These economies are using the power of platforms to create large scale markets very rapidly," said Paul Daugherty, chief technology officer, Accenture. "Many European economies are in danger of missing out in the platform economy. Multi-stakeholder cooperation is required to address the fragmented digital markets and to support the greater levels of digital enterprise and consumption that successful platform businesses need."

Accenture's analysis shows \$20bn was invested in digital platforms between 2010 and 2015 in 1,053 publicly announced deals. More than half of this investment took place between 2014 and 2015. It also shows that rankings on the Platform Readiness Index strongly correlate to the levels of digital platform activity and investment in G20 countries.

The report recommends that governments engage with businesses leaders to advance a range of policies that can create a rich enabling environment for digital platforms including the following actions:

1. Prioritize data protection standards and rules: Drive the harmonization of data privacy and data security legislation. Smooth cross-border data transfers.
2. Design regulations with digital platforms in mind: Experiment with regulations alongside new technologies and business models. For instance, the U.K.'s Financial Conduct Authority's "regulatory sandbox" allows start-ups to test ideas without immediately incurring all the normal regulatory consequences.
3. Encourage cross-border electronic trade. Harmonize taxes and standards, consumer protection, contract laws and logistics infrastructure. The eWorld Trade Platform (eWTP), initiated by B20 China, aims to



Accenture Platform Readiness Index

accelerate international policy collaboration to support SMEs.[1]

- Invest in digital infrastructure: For example, the E.U.'s Payment Services Directive (PSD2) will empower start-ups to expand customer reach and encourage innovative business models.
- Think small, act big: Educate SMEs on alternative funding, such as crowdfunding and peer-to-peer lending; and on data privacy and consumer protection. Support SMEs with digital economic zones to support e-commerce.

Five ways to succeed

Accenture notes that only 15 percent of Fortune 100 companies have developed digital platform business models to date. Successful digital platforms will proliferate as small businesses and traditional industries follow the lead set by digital-born platform companies. Accenture identifies five factors critical to sustaining critical mass in digital platforms, which use new technologies to create large scale markets of customers and service providers:

- Proposition:** Create differentiated platform services that extend beyond the point of transaction; and that support both customers on the demand side and service providers on the supply side.

- Personalization:** Target customers through tailored experiences across all channels, using customer data to anticipate needs and offer bespoke experiences.
- Price:** Apply new pricing models, such as pay-as-you-go, 'freemiums', and subscription pricing to respond to peak demand.
- Protection:** Embed trust at the heart of the platform, using both prevention and compensation techniques to attract customers and differentiate the platform.
- Partners:** Scale the platform rapidly by identifying digital partners – such as app developers and payment service providers – who can enrich the platform experience and fulfil customer needs.

"Digital platforms are not just the preserve of digital born companies, like Airbnb and Alibaba, but are now becoming a default business model in most industry sectors, both B2B and B2C," said Francis Hintermann, managing director, Accenture Research. "To enjoy efficiencies and high rates of growth, companies will need to transform everything from the way they co-create goods and services with third parties, tailor their offerings to customers, and price them dynamically. Crucially, they will only sustain critical mass by working with digital partners who can deliver the range of functional services that complete the customer experience." □

HOW TO CREATE LIVE CHATS, SURVEYS, OPT-IN & PROMO MESSAGES IN WORDPRESS

WordPress is a free CMS but can be used for some really useful functionality for emerging businesses

– Raj Kumar Maurya

WordPress is an all-rounder CMS and gives you vast options of plugins to enable all the basic and advanced things you want in your website. For example, if you want to create a Promo messages, Subscriber pop-up or opt-in, contact form, live chat, social sharing and follow buttons for WordPress website then you just need a single free plugin called GetsiteControl.

Most free online software or plugins have some limitations with their free versions. But Getsitecontrol gives a complete set of user engagement tools free of cost. From live chat to online surveys, contact, social media tools and more can be managed by using one single dashboard. Live chat and surveys can be used to answer the different consumer's questions, to provide support & services. In this tutorial, we are going to show you how to add live chat in WordPress.

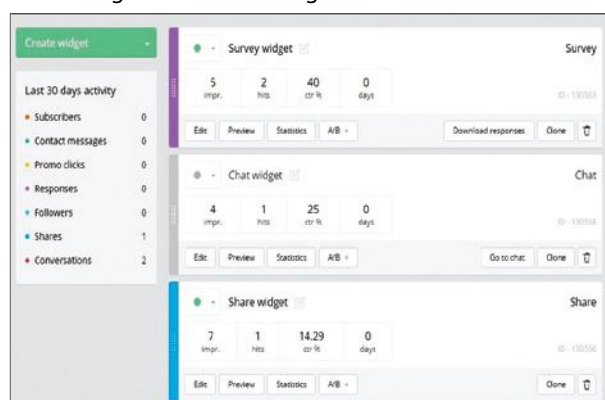
This simple free Getsitecontrol plugin can solve your 6 user engagemnets problems.

How to install Getsitecontrol plugin

Step 1: Open your WordPress dashboard > go to > Add Plugins search for Getsitecontrol and install it.

Step 2: After installing and activating the plugin. Click on Getsitecontrol option and signup in the plugin.

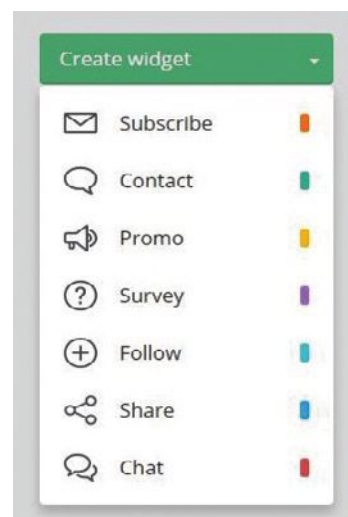
Step 3: Now click on Manage the widget option and Getsitecontrol widget dashboard will open. The dashboard is a simple and user friendly form where you can create a different widget such as Chat widget, subscribe widget, survey widget, contact widget, promo widget, share widget and follow widget.



How to create a live chat support

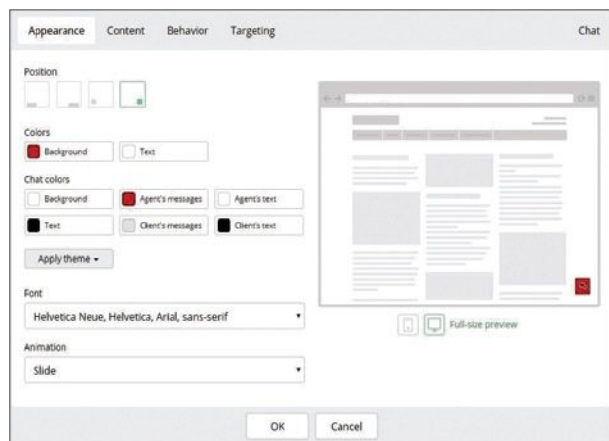
After installing the plugin, you will see a dashboard. Now to install a live chat widget perform the following steps:

Step 1: On the dashboard of Getsitecontrol you will see an option Create Widget. It is a drop down menu form where you can select different widgets you want to enable on your website. Right now, we are going to create a chat widget. To create chat widget, just select the chat option from the chat widget.

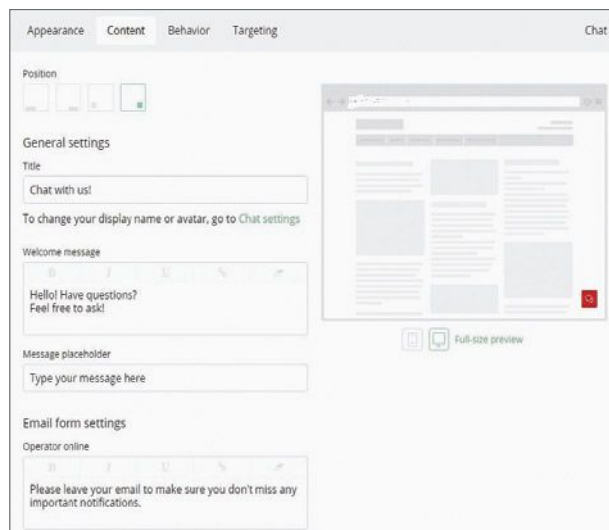


Step 2: The next step is to configure the chat widget according to your need. You will get four options: Appearance, Content, Behavior and Targeting.

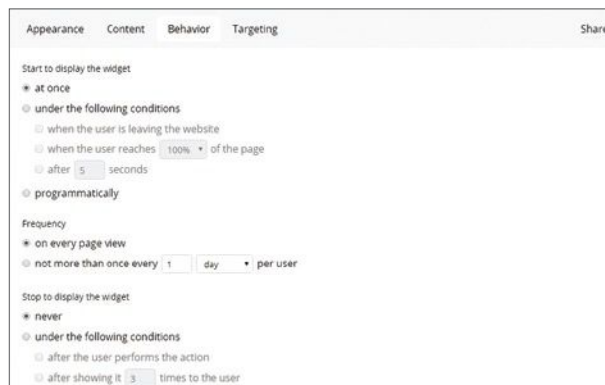
Appearance: In this tab, you can customize the looks, position, color and font of the chat widget to suite the website theme.



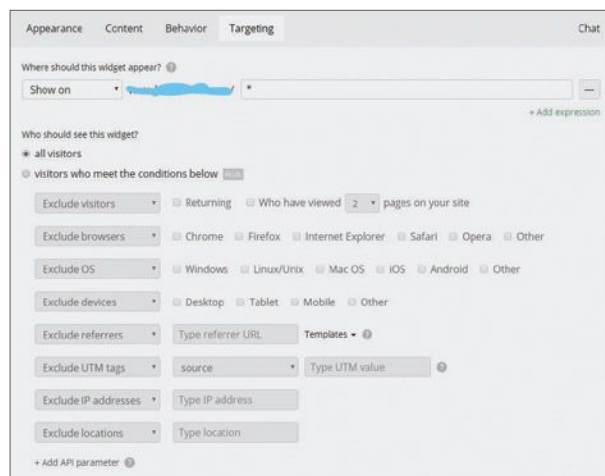
Content: In the content section the text that's going to be displayed during the chat time to the users can be edited.



Behavior: Now this is something every user wants i.e control the behavior of widget. From this section, you can control widget frequency so that you can monitor how many times it will appear to any user and when.



Targeting: By default, all visitors can see the published widget but if you want to customize it on the basis of location, browser, IP address, device and more then you have to go for pro plan.



In this way, you can add live chat to your website to talk to your website visitors in real-time. Also, follow the same steps to add subscription, survey, promo message and other widgets. □

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16 BEST FREE AUGMENTED REALITY APPS

Experience virtual reality in your lives through these free AR apps

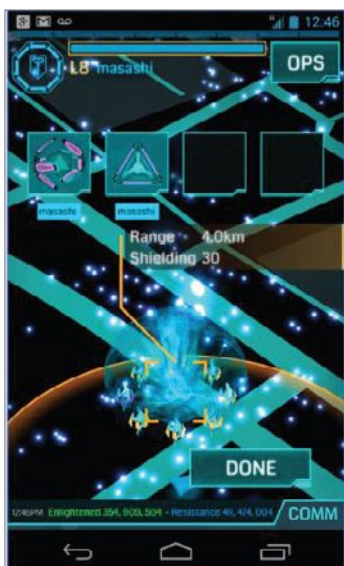
– Raj Kumar Maurya

Augmented Reality builds upon the world around us by displaying information overlays and digital content tied to physical objects and locations. For example, a last year AR game Pokemon Go gives us an ability to capture and train digital creatures in the real world. By using this technology, you can also bring a static print ad to life, watch a movie trailer by pointing your smartphone camera at a poster, or discover nearby establishments and landmarks with your mobile device. Here are some augmented reality apps for Android devices to give a glance of future.



Pokémon GO

Niantic's Pokémon Go, a game that has quickly captured everyone's attention and with the help of augmented reality technology, has taken the mobile gaming to next level where virtuality meets reality. Pokémons are out there and you need to find them. As you walk around a neighborhood, your smartphone will vibrate when there's a Pokémon nearby.



Ingress

Ingress transforms the real world into the landscape for a global game of mystery, intrigue and competition. Move through the real world using your Android device and the Ingress app to discover and tap sources of this mysterious energy. Acquire objects to aid in your quest, deploy tech to capture territory and ally with other players to advance the cause of the Enlightened or the Resistance.



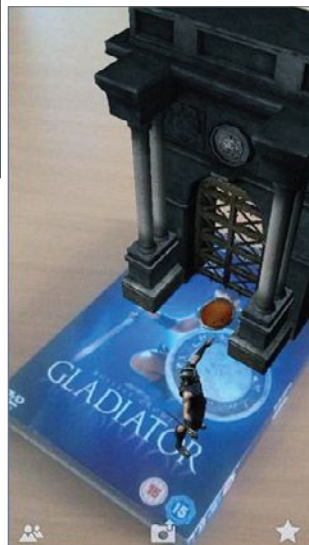
Layar

Connect digital content with the real world with Layar. It allows users to view embedded digital content within a variety of sources, such as posters, magazine pages, advertisements and product QR codes. You can also scan the posters for the world's most popular releases and coming attractions to watch the trailer, get more info, see what the critics say and more.



Blippar

Discover a whole world through your phone's camera by 'blipping' everyday objects, products or images. Unlock helpful information, interact with your favorite brands, play videos, games, music and more. All through the magic of augmented reality and image recognition.

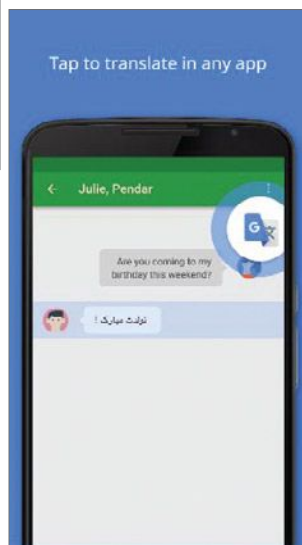


Aurasma

Aurasma is another augmented reality app for viewing embedded content just like Layar. It allows you to create your own Auras using your photos and videos, or via a library of pre-built Auras available online. Simply open to the app's viewfinder (bottom-center menu button) and point it at your target to unlock the experience.

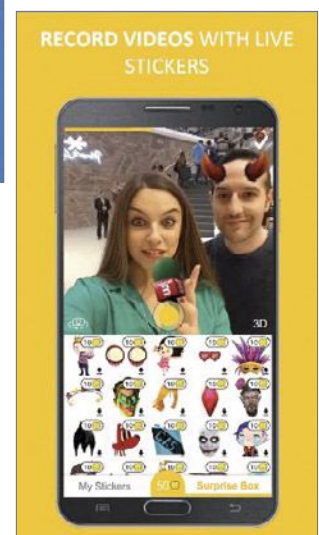
Google Translate

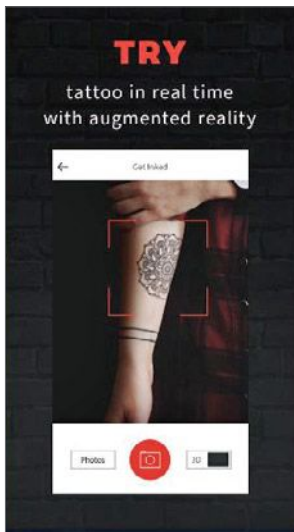
Google Translate is a great audio translation tool and with its augmented reality, real-time visual translation it features becomes a handy tool. You just have to hold the smartphone camera and focus on the text and Google Translate will provide real-time translations of words and phrases from a variety of languages.



Mybrana, LIVE stickers selfies

Beside using Augmented reality for advertising and promotion, there are also some great apps that let users exercise their creative side. Mybrana is one of them it allows users to overlay a variety of graphics, stickers and animations over photos and short videos, all of which you can share with your friends and family.





Inkhunter

Try on virtual tattoos with Augmented Reality before it's inked forever. The app projects any tattoo design, on any part of your body to let you see how it will look.



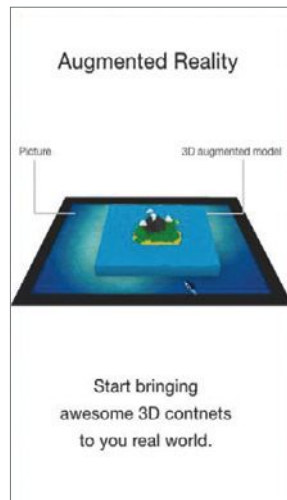
Colorify Augmented Reality

Change the color of the leaves, change the color of your furniture or your lipstick and watch it live using your Android phone.



Augment – 3D Augmented Reality

Augment is a mobile app that lets you and your customers visualize your 3D models in Augmented Reality, integrated in real time in their actual size and environment.



WallaMe

Leave a message on the wall, or somewhere in a real place, that can be seen only by those you want. It's a funny way to hide private messages in public places. Your augmented reality wall can then be viewed by your friends when they are in the location where you created it. You can also make your wall public, so everyone passing by the physical location can use the WallaMe unique viewer to see your augmented reality Wall.

Vear – Augmented Reality

Vear is an AR and VR app that lets you experience high quality augmented reality and virtual reality contents and play games with or without google cardboard. Vear redefines mobile AR & VR by providing an intuitive and seamless user experience. Scan Vear enabled print images to get insight about products.



AR Car Locator Free

AR Car Locator is the app which allows you to find your car by using augmented reality. The app runs in background mode by pressing the Home button and can be reactivated before parking. Save your car location and photo by clicking on the parking button. Once the car's location is set, the app creates a visible marker showing the car, the distance you are from it and the direction you should walk to find it.



Crayola Color Alive

This app works with Crayola Color Alive Action Coloring Pages. FREE Action Coloring Pages can be found inside the app. Save and print them to start playing right away. Use any Crayola Crayons or markers to bring your coloring to life and apply special effects to your creations. Pairing an innovative 4D app with exclusive Crayola Color Alive action coloring books, Color Alive gives parents and kids the ability to interact with their real world creations like never before. Characters fly out of your coloring pages, coming to life and interacting with you through augmented reality.

AR GPS Compass Map 3D

Augmented Reality GPS Compass Map 3D displays a 3D compass that gets combined with the camera image. Your current location from GPS is shown on a separate map with adjustable size. The compass uses a very effective fusion and filtering algorithm to combine the values of the magnetic field sensor, the accelerometer and the gyroscope (if installed in your device) to achieve a maximum in precision and stability.



Wikitude

Wikitude allows you to see more than your eyes only could capture. Wikitude's "computer vision" is a bit like magic and connects you with the world in a completely new way. Use Wikitude as a tool to experience augmented reality content, campaigns, projects, promotions, games and so much more by simply scanning the things you see. Bring print media to life with additional augmented content including videos, animations, 3D models, Facebook and "Buy Now" buttons.



THIN CLIENT

DELL WYSE 3030 LT

— Ashok Pandey

Are you stretching your budget to add more power to your PC, but still not satisfied with the performance? Besides spending money on new hardware, you can look for a better alternative and thin clients is one of the best solutions to your old PC without spending too much. A few might argue about usability and suitability for their business, yet it can replace your aged PC. Dell has come out with a new 3030 LT thin client to offer a powerful but cost effective alternative to PCs. The Wyse 3030 LT comes with several multimedia capabilities and essential protocol and peripheral support including optional PCoIP. This small in size, thin client can be used to replace different terminals, performing various tasks.

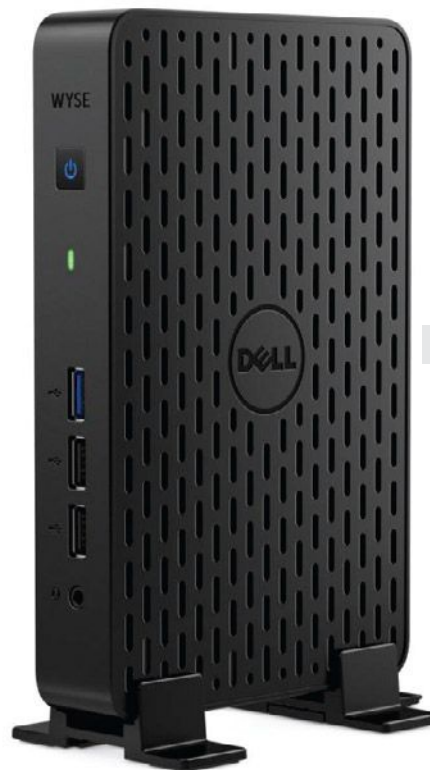
Compact machine: It's a bit thicker and bigger than previous 3.5-inch hard drives, measuring 7.37x 1.15 x 4.61 inches. The compact machine can be mounted behind the monitor to save more space. It is powered by Intel dual-core processor with integrated graphics engine and has three USBs (two USBs 2.0 and one 3.0) on the front and one USB 2.0 at the back. Two HDMI ports, Kensington security slot and one LAN port is also placed at the back. Meaning you get ample amount of connectivity options. The thin client comes ready to connect to Citrix, Microsoft and VMware right out of the box.

Bundled with features: Dell has tried to add maximum possible features in this small machine. It is secured with Wyse ThinLinux or virus-resistant Wyse ThinOS operating systems. Besides, it has Trusted Program Module (TPM) chip for greater security. For different uses, Dell offers various management; on-premise with "hands off" file server with Wyse Device Manager, or cloud-based with Wyse Cloud Client Manager. Depending on your requirement you can choose one, or you can manage your own.

Performance: VMware or whatever way you want to configure it. Though a new user may find it a little complicated, but professionals can simply add it to the predefined network, using the Thin OS. Once connected and required permissions granted, it will work like your previous connected PC, but with greater performance.

We used VMware to set up the device and built a Windows 10 machine on it. Running several daily productivity apps, was not a problem. We were also able to run some high graphics intensive apps as well, such as Photoshop. The thin client runs smoothly and its built-in graphics enhances the overall graphics experience. The compact machine has a small speaker inside. We played some videos over YouTube to check its sound. It's quite tiny, so use its built-in speakers only in absence of any other alternative, else connect an external speaker using the 3.5mm connector.

We tested its power consumption which normally is a major issue with aged devices. Wyse claims to consume less than 6 watts of power. We connected the device with digital true RMS wattmeter to check its consumption in the real world. While powering on, it consumes only 1 watt of power, but while running different applications, we got 8.9 watts and in the ideal condition,



Price: ₹22,866/-

SCORE

PRICE: **9/10**
PERFORMANCE: **9/10**
FEATURES: **9/10**

Overall: **9/10**

KEY SPECS: 1.6 GHz Dual-core Intel Celeron N2807 processor, Wyse ThinOS/Wyse ThinLinux, 4GB Flash eMMC, 2GB RAM DDR3L, USB 3.0 & USB 2.0, HDMI, Ethernet port

PROS: Compact, less power consumption, connectivity options, easy to mount

CONS: Low-quality speaker

it showed negligible consumption. On the other hand, if we see consumption of traditional PCs then it varies from 60 to 90 watts or even higher.

Overall, this compact thin client is capable of handling various applications easily without consuming a whole lot of electricity.

Bottomline: Dell Wyse is a compact yet powerful device to replace the aged PC. It consumes less electricity as well as almost no space. It comes with several connectivity options that let you conveniently add all peripherals to it.



SMART HOME KIT

OAKTER SMART HOME KIT

A personal IoT ecosystem with a tag of Make in India, this device lets you take charge of your home appliances through a smartphone

— Tushar Mehta

Ever wished you had a magic wand to turn appliances at home or office on or off? Well, Oakter has a solution to save your lazy ass. Oakter's Smart Home Kit lets you take full-fledged control of power sockets in your house, or office, right from your smartphone. Futuristic? We look deeply into it.

Serving not only slackers, Oakter Smart Home Kit could be a significant aide in the lives of the ailing as well as elderly beings. By downloading Oakter's app into their smartphones (Android/iOS) you can toggle connected devices on or off, by staying inside your snugly blanket.

The bundle contains a central controlling Hub which is the heart of the system, two 6 ampere sockets which Oakter calls Smart Plugs, a 16A socket/Smart Plug, a 25A Smart Box for remotely controlling MCBs embedded in your switchboards or for controlling appliances like Air conditioners, and an Infrared-enabled remote control – called touch leaf – which works in vicinity of each of the plugs, as well as the Hub.

Convenient Set-up: For initial setup, users must download the Oakter Application and login with the default credentials of the device, and then connect to Oakter Hub over Wi-Fi. Once connected to the smartphone, users are required to set up an account using their email id. Once connected successfully, you can take control over the Smart Plugs via Oakter app. Each unit has an LED light which beams white when the devices are in Off mode and turns amber when the device is turned on.

Intuitive App Interface: The main screen allows users to switch plugs on and off. Users can assign pictures and names to different connected Smart Plugs to save themselves from confusion. Users can control smart plugs on the move over mobile data, even 2G until hub is connected to Wi-fi.

Setup, Connect and Forget the Switch: The Smart Home Kit is capable of nearly wiping off the click sound of switches from your memory. The app gives the feasibility of scheduling the powering on or off of appliances, as well as diligently notifies when there is a change in the status. Further, users can order additional Smart accessories such as Thermostat and smart lock over the app. Users can assign up to three devices which they can control via touch leaf, which is especially helpful for those not so familiar with technology. The smart plugs can be manipulated even during Wi-fi outage, using the Touch leaf controller.

Bottomline: In an age where we are contemplating the use of IoT in our lives, the Oakter Smart Home kit makes your life immensely convenient, but cannot be called a "smart" device. There is no tracking of power consumption. Overall, it is a good starting point for home automation. The usage is utterly simple, extremely convenient – just image



Price: ₹10,000/-



SCORE

PRICE: 8/10

PERFORMANCE: 10/10

FEATURES: 9/10

Overall: **9/10**

KEY SPECS: Wi-Fi enabled, 6A, 16A, 25A Smart Plugs, Infrared Touch Leaf Remote Control

PROS: Convenient and Easy to Use, Works on 2G and even during Wi-fi outage

CONS: No Smart Data generated

touch screen switches instead of the conventional ones. The Oakter Smart Home Kit is priced at Rs. 10,000. But given that the Oakter Smart Home Kit is a fruit of "Make in India," we shall expect more attractive pricing in future.



SECURITY

ANG QTW918-DP

— Ashok Pandey



Price: ₹9,500/- + Tax

SCORE

PRICE: 8/10
PERFORMANCE: 9/10
FEATURES: 9/10

Overall: 9/10

Day Shot

Night Shot

Home or office, your security is pre-eminent for you. Surveillance cameras are one of the best options to protect your home or office from illegal activities. Nowadays no technical skills are required to setup a CCTV camera. What's more, these can be operated using your smartphone and you can also watch videos in real time to track movements and happening when you are not around.

The Make: Recently, ANG has come out with a wireless CCTV camera, which we tested in our lab. The camera is quite easy to setup. It's a plug & play camera; just insert power cable and ethernet cable. It can even be connected to your wireless network. Once connection is made, you can operate it using your PC, running Windows or Linux or smartphone easily. Just install QV. See the app available on Android and iOS platforms. You can rotate the camera in the required direction, i.e., you have the flexibility to scan the room across all the angles.

The camera is equipped with mic and speaker to communicate with the person available in the room. It has night vision as well to monitor your home or office in the night. The 720p camera captures images with decent quality and colors. You can identify the person easily, but if the object is far away then it might be difficult. The night photos are also quite clear and no need to worry about storage as it supports up to 32GB of microSD card. The DP is a wireless sensor that can be easily installed on your window or door. The wireless device alerts you on every entry. Its function is quite simple, having two parts, one fixed on the door and another on the door casing. When the door closes, the two touch the surface but whenever

KEY SPECS: 720P Resolution wireless alarm camera, wireless PIR Detector applied in detecting room, hallway, stairs, balconies etc., wireless door / window sensor, supports iPhone, Android, computer monitor, Microsoft certification plugin, supports 32G TF Cards

PROS: Wireless, decent quality images and videos

CONS: Expensive

anyone tries to open the door, it detaches and the alarm is raised.

Bottomline: ANG QTW918 and DP are the best solutions to protect your home from various hazards. You can keep an eye on your home or office wirelessly as well as lock the door and windows so that if any unauthorised entry happens, you get notified.

SECURITY

ANG QTN7018D

— Ashok Pandey



Price: ₹7,900/- + tax

SCORE

PRICE: 9/10
PERFORMANCE: 9/10
FEATURES: 9/10

Overall: 9/10

Day Shot

Night Shot

Another camera from ANG, this is a dome camera and can be connected using a LAN cable. It comes with 1.3 MP sensor to capture quality images, be it day or night. It can capture videos at 960p with 30fps. It has 65 feet of IR distance, which means that it can capture images of any object placed even at 65 feet of distance and has 10-20m IR night view distance.

The camera can be configured on your network and using the app you can view the live video as well. The app is available on Android and iOS platforms as well as you can watch video on your PC. It captures images with depth detail. However, the objects captured at 65 feet distance are not appreciable in quality and detail. It's a network camera so all the captured videos and images would store on your given network location. It also has a motion alarm and the best part is that it is made for outdoor usage. It is IP66 rated waterproof camera. This means that you can forget

about monsoon and fix it wherever you want to.

Bottomline: Decent outdoor camera with the IP66 rugged rating. It captures quality images and videos even in the night. With motion sensor, it can be useful to track motion when you are not around.

KEY SPECS: 1.3 Megapixel CMOS sensor, 960P full real-time coding, max 30fps @ 960P, Max IR Distance: 65 Feet Night Vision, 10-20m IR night view distance, support smart phone, iPad, remote monitoring

PROS: Anywhere any time monitoring, decent quality images in day and night, supports iOS and Android

CONS: None

FUJIFILM X70 MIRRORLESS CAMERA

A compact, mirrorless alternative for those intimidated by bulky DSLRs

— Adeesh Sharma

The Fujifilm X70 is a sturdy camera that comes in a mostly metallic casing and actually feels quite compact for a professional camera. You'd actually do better with either a neck or a wrist strap wound to the camera before you even attempt taking pictures. There's a nice, soft rubber grip at the front for the fingers and the thumb grip at the back. However, if you've got big hands like me then you are bound to feel a little cramped for space. The dedicated shutter speed (upto 1/4000 sec in manual mode) and aperture dials (F 2.8 to 16) give the photographer a quick option to change settings while shooting and switch between auto and manual controls with the dedicated auto override switch.

The control ring surrounds the lens that lets you digitally zoom amongst the default 28 mm, 35 and 50 mm focal lengths. The Q button on the right side of the back of the camera provides you easy access to the grid of picture settings such as changing flashlight, LCD brightness, exposure compensation, ISO, amongst others. We did feel a bit of a strain in changing aperture size, however the two notches on each side help ease the pain a bit. Likewise, again due to the compact design, you might feel the need to reach out to the shutter speed dial while clicking images.

The tilting and flip-enabled LCD screen: A nifty feature of the X70 is the tilting LCD display that helps in taking selfies and images at awkward angles. The flip mechanism allows the screen to tilt downwards at 45-degrees for shooting flying objects such as birds. The kickstand lets you do away with the tripod and allows the camera to lean back at any angle for long exposures that are required especially when shooting video clips.

The fixed, 28mm equivalent F2.8 Fujinon lens is the always exposed but can be covered with a metal lens cap to protect it from damage. The four-way controller combined with the Fn button on the bottom right do let you setup the camera to your liking. Also, there's a WiFi button on the right side that allows you to wirelessly transmit photos to a paired storage device.

Touchscreen-enabled control: The touchscreen LCD lets you control the autofocus while shooting and there is also a small touch button that toggles the touchscreen mode to either 'focus,' 'shot' or 'off.' In the 'focus' mode, you can set the focus point on the screen, while the shot mode lets you shoot images, however, we did notice a lag in performance here. The other benefit is pretty standard, ie when you review images it lets you swipe pictures in both directions and for zooming in details, just as you would on a smartphone.

We also felt that it was a little difficult reaching out to the video record button, tucked in the top right corner. Also the haptic



Price: ₹61,999/-

SCORE

PRICE: 8/10

PERFORMANCE: 8/10

FEATURES: 9/10

Overall: **8/10**

KEY SPECS: Key specs: Large sensor compact, max resolution 4896x3264, 16 MP, APS-C (23.6 x 15.6 mm), CMOS, EXR Processor II, ISO Auto, 200-6400 (expandable to 100-51200), JPEG (Exif v2.3), Raw (RAF format, 14-bit lossless compressed or uncompressed), F2.8-16, 35mm, 50mm digital teleconverter, 3" LCD screen with 1 mn dots, 1/4000 sec max shutter speed, 340 gm, built in flash, micro USB, micro HDMI.

PROS: Nice compact body, all metallic casing, LCD screen with tilt and swivel capability

CONS: Lack of optical zoom, not-so-easy to use video record button

feedback was not that smooth and one needs to press it for a little long to start and stop video recordings.

The battery in the X70 is rated at 330 shots per charge but we found it good enough for a day's long shoot session. The camera does need its dedicated charger as charging with just about any smartphone charger doesn't work. In high-speed continuous drive mode, the X70 manages 7 frames per second in JPEG mode while in Raw mode the camera hits its buffer after about seven shots after which the speed drops considerably.

Bottomline: A nice compact camera for photography enthusiasts who are averse to using the heavy-body design of DSLRs.

5 BEST SELFIE SMARTPHONES UNDER 30K

The craze for really good selfie capable smartphones is increasing each passing day and accordingly smartphone vendors have changed tracks to increase pixels and camera quality on the front side

— Adeesh Sharma

No more hazy and swollen-faced, grainy or poorly lit selfies any more! The younger generation wants pictures that make them look apart on social media platforms. So we are looking at selfie smartphones that have an excellent front camera with good resolutions, quality lens and sensor and of course more pixels. Here we shortlist the best five right now.

1. Vivo V5 Plus

Price: ₹27,980

Building on the Vivo V5, the Vivo V5 Plus (20 MP + 8 MP) dual front selfie camera is one unique selfie-focused camera that comes with dual cameras to provide a DSLR like blur effect to selfies. If you are truly amazed by this feature then look no further. This is the only one right now to offer this right now and the results are pretty awesome. Read the full review here. Vivo V5 Plus comes with a 20 MP Sony IMX376, f/2.0 camera sensor along with an 8 MP camera sensor at the front. The rear has got a more traditional 16 MP f/2.0 camera. The second, smaller camera on the front helps provide the depth of field effect to selfies, so you can focus on the subject and get the much-desired blur effect on the background. To get the effect, select the 'Bokeh' feature while taking the selfie. Next, increase the aperture size while taking the shot and there you go. You can immediately notice the subject appear sharper as compared to the background. The Vivo V5 Plus also lets you edit the picture later on, in case you've change your mind and want to focus on the already blurred background and conversely move the subject to the background. Also, the soft, diffused white light, called moonlight selfie feature, lets you brighten up your photo pretty nicely in low-light environments. The key specs of the smartphone include a 5.5 inch FHD (1920*1080) resolution covered with 2.5 D curved glass and Corning Gorilla 5.0. The V5 Plus runs on Qualcomm Snapdragon 625 Chipset and 4 GB of RAM. It is supported by 64 GB of storage but does not offer storage expansion via an SD card. The V5 Plus runs on Android Marshmallow 6.0.1 with FunTouch OS 3.0 skin on top and is powered by 3055 mAH battery which supports fast charging as well.



Price: ₹26,490



2. HTC Desire Pro

While the rear has a mighty 20-megapixel camera, the 13-megapixel front camera does a pretty good job of taking brilliant selfies. The front sports a 5.5-inch screen which is preserved under a sheath of Gorilla Glass. The resolution of 1080 x 1920 pixels renders a pixel density of 401 ppi. HTC Desire 10 Pro runs HTC Sense Home interface atop a skinned version of Android Marshmallow 6.0. With the inbuilt 64 GB of storage, you can easily store thousands of pictures, audios and videos as well as a couple of hundred apps without worrying about running out of storage. Additionally, you can use the Hybrid SIM slot to insert MicroSD card with storage as huge as 2TB. At its heart, Pro 10 uses a 64-bit MediaTek Helio P10 Octa-core processor clocked at 2.2 GHz. It is backed by 4 GB of RAM which makes multitasking something you won't have to fret over.

3. Sony Xperia XA Ultra

Sony has always been a leader in digicam space and this selfie phone comes as no surprise. It has the Exmor R S lens by Sony, a quality lens which appears bigger than small camera lenses on other smartphones, and comes with 16 MP front selfie camera. What's more it comes with optical image stabilization for the front camera which helps to reduce blur due to movement and can make the images much sharper. There's also a front flash for clicking images at night. The rear camera is a 21.5 MP Sony Exmor RS lens, which also has Hybrid Auto-focus, OIS and dual LEDs. The smartphone is powered by Mediatek Helio P10 processor clocked at 2.0 GHz, and comes with 3 GB RAM and just 16 GB internal storage which can be expanded upto 200 GB using a micro SD card.

The smartphone has a large 6.0 inch display with Full HD resolution, runs on Android Marshmallow 6.0 with a 2700 mAh battery.



Price: ₹25,490



Price: ₹26,990

4. Oppo F1 Plus

The Oppo F1 Plus has a 16 Mega pixel front camera with f/2.0 aperture lens. This large aperture lens can absorb good amount of light. Also the soft light flash makes selfies look better even in low light conditions. The beautify mode and other software enhancements let you further improve your selfies while editing them. At the rear is the 13 Mega pixel camera. Apart from brilliant cameras, Oppo F1 Plus comes with 4 GB RAM and 2.0 GHz (Mediatek MT6755 Helio P10), Octa Core processor. The smartphone has 64 GB of internal storage and 2850 mAh battery capacity. It has a 6.6 mm slim body, a 5.5 inch screen with full HD display. The Oppo F1 Plus runs on Android Lollipop 5.1.

5. Vivo V5

Another one from Vivo that's exclusively for selfie lovers. It has a 20 Mega Pixel front selfie camera with Sony IMX376 image sensor, f/2.0 aperture and 5P Lens. The remaining features are almost similar to the Vivo V5 Plus which comes with dual cameras at the front. It comes with features like gender recognition, moon light flash that provides a diffused white light to brighten up the face in low light. Also, the front selfie camera can record 2592 x 1944 pixel resolution videos at 30 FPS.

This smartphone, though, comes with a 5.5 inches HD display only. It is powered by the Qualcomm Snapdragon 652, Octa core processor clocked at 1.8 GHz and there is 4 GB RAM, Android 6.0 (Marshmallow) along with the Funtouch OS 2.6 skin. The mobile comes with 32 GB of internal storage which can be expanded up to 256 GB through micro SD Card. The battery capacity is decent at 3000 mAh battery.



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FOSSIL Q NATE

— Ashok Pandey

Digital Wear market is now slowly gaining momentum. The promising market is filled with different products. Fossil, a well-known name in the wrist watch industry, has now brought its hybrid smartwatch named Q Nate. It's a quartz watch with smart features which can be accessed via the app available on Google Play Store and iOS App Store, Android OS 4.4 and iPhone 5 or iOS 8.2+. In the first look, it appears like a simple quartz wrist watch with the large 50mm dial. The dial is made of stainless steel with leather straps.

Look and feel: It has neither screen nor any software. It's a quartz watch holding chipset beneath, which tracks your activities and communicates with smartphone. The combination turns the watch into hybrid smartwatch that blends analogue design with smart connectivity. The big dial has a minute and an hour hand and a small dial inset at the bottom. Still, you can see date, set alarm and time in 24-hrs format. The small dial comes with two functions. Numbers in orange color show the percentage of achieved goal while the bottom half shows function performed by the button press.

Smart features: For smart features, you need to simply connect the watch to your smartphone using Fossil Q app and Bluetooth. Once connected, it asks for some basic information including your name, height, weight, etc. and then let you set daily fitness goals. It's not all, you can set an alarm, view 24-hour time, compare time in multiple time zones and track everything from steps to calories to sleep.

Moreover, you can control your phone as well using the hybrid watch - press the bottom pusher to take a photo. The watch notifies you whenever you receive texts, calls, emails and app updates, etc. whatever you choose. You can control your music with your phone's selected music player whether it's Spotify, Pandora, Soundcloud, Google Play, iTunes or Apple Music. It can even help you to track your phone by playing an audible alert on your phone.

The massive battery: Fossil Q Nate has a massive battery life of up to six months. It's not rechargeable, so you need to replace with the new one as when you do with traditional wrist watches. It could be good for some, while others can complain about it as most of the smartwatches come with the rechargeable battery, but they have a life of few days.

It's a watch combined with smart features: The market is flooded with smart bands and watches, which come with screen and loaded with a suite of apps. This watch doesn't offer those features, but it's a true quartz watch with added smart features. It doesn't have screen, so no need to use any gesture or press any button to see the time, simply look at it as in your traditional watch. It connects to your phone to visually track your activities, or you can see the achieved goals on the watch by using the small dial. So, it can work alone as well as with your smartphone. It's a hybrid watch offering several tracking options, but you won't get a visible notification. For example, phone will vibrate for your chosen apps. The dial is large, so while wearing on skinny hands it may feel awkward as well as heavy as it weighs 454 grams.



Price: ₹14,995/-

SCORE

PRICE: 9/10
PERFORMANCE: 8/10
FEATURES: 8/10

Overall: 8/10

KEY SPECS: Supports Android OS 4.4+ or iPhone 5/iOS 8.2+, Bluetooth, CR2430 battery

PROS: Easy to operate, quartz wrist watch with additional smart features, build quality

CONS: Large dial, not a smartwatch

Bottomline: The hybrid smartwatch offers the flexibility of a traditional wrist watch. Additionally, it comes with the chipset that make it smart. If you love to have a smartwatch but don't want to miss the pleasure of having a quartz watch, then it could be the right choice for you.

LENOVO K6 NOTE REVIEW

— Sidharth Shekhar

Lenovo, the second biggest smartphone brand in India has launched the K6 Note – the latest in its K-series lineup. Lenovo has tried hard to woo consumers with noteworthy specifications and design.

Is Lenovo K6 Note the right choice for you? Read this review to find out.

Design: The Lenovo K6 Note feels sturdy thanks to all-metal design. It comes with a 5.5-inch full-HD (1080x1920-pixel) IPS display and this all-metal smartphone gives a solid and premium feel upon holding. On the design front, K6 Note has a unibody design with hybrid SIM tray on the left side. You can fit either two SIMs or one SIM and one microSD card. The 3.5mm audio jack is on top, while there are two speaker grilles on either side of a Micro-USB port on the bottom. The volume rockers and the power button are placed on the right.

The K6 Note is vibrant and produces really sharp text and colors. The brightness is decent for outdoor use. However, Corning Gorilla Glass protection is missing from K6 Note which is odd. For people who love to watch movies or videos, K6 Note is a good choice as the bigger screen makes it better for watching videos and playing games.

Lenovo K6 Note specifications and features: Under the hood the K6 Note has Snapdragon 430 processor clocked at 1.4GHz. There are two variants of this phone, one with 3GB of RAM and 32GB of storage, and one with 4GB of RAM and 64GB of storage. The smartphone supports expandable storage via microSD card (up to 128GB).

On the camera front, K6 Note sports a 16 megapixel rear camera and 8-megapixel front camera with dual LED Flash and both the cameras come with phase detection A/F. We noticed a slight bulge on the rear camera lens which makes it prone to scratches. The front side of the phone is dark black which looks great and is easy to hold in hand. There's also a fingerprint sensor at the back which is very responsive.

Connectivity options on the handset include 4G with VoLTE, Wi-Fi 802.11 b/g/n, Bluetooth 4.1, and GPS.

The Lenovo K6 Note is powered by Android 6.0 Marshmallow with Lenovo's Vibe Pure UI on top. For users who prefer privacy K6 Note has app lock functionality that allows them to lock any app through a fingerprint. With Dual Apps mode, users can have two WhatsApp and other accounts on the same phone; and Fingerprint Snap, allows you to use the fingerprint sensor act as an alternative shutter button. Overall, Vibe Pure UI is smooth and we didn't face any problem while operating the device.

The K6 Note also supports Lenovo's proprietary TheaterMax technology and ANT VR headset.

Performance: K6 Note easily lasted a day with average web browsing and playing YouTube videos on 4G. The long-lasting battery is definitely the USP of the smartphone.

The K6 Note handled multi-tasking, gaming and switching between apps smoothly without any heating issue despite coming with a mid-range Snapdragon 430 processor. Games like Dead Trigger and CSR Racing worked smoothly but we noticed lag while playing Mortal Kombat and Injustice: Gods Among Us.

The Lenovo K6 Note supports VoLTE (voice over LTE) on both SIMs and we didn't experience any call drops but at times the call quality lacked clarity.



Price: ₹13,999/-

SCORE

PRICE: 6/10

PERFORMANCE: 6/10

FEATURES: 6/10

Overall: 6/10

KEY SPECS: Vibrant 5.5 inch Full HD Screen, Equipped with twin front-facing speakers with Dolby Atmos, Rear Camera: 16 Megapixels with PDAF and CCT flash technology, Front Camera: 8 Mega Pixels with auto-beautification and gesture shots, RAM: 3 GB, ROM: 32 GB, Expandable Up to 256 GB, Battery: 4000 mAh, Processor: Qualcomm SnapdragonTM 430 Octa Core 1.4 GHz, Operating System - Android Marshmallow

PROS: Design and build quality, vibrant display, powerful speakers, Ant VR support.

CONS: No Corning Gorilla glass protection, Very bad earphones, No quick charge

The Lenovo K6 Note camera is good for everyday photography. The Smart Composition tool makes it easy for you to click pictures without worrying about light condition as it automatically changes according to the setting. K6 Note camera has many modes including Pro, Panorama, Nightscape, HDR, Fast-motion, and Slow-motion.

Verdict: The K6 Note offers a large screen with solid build quality and display. You are going to love the camera and multiple useful features like Secure Zone that enables the user to keep some content and apps away from prying eyes. You can use this feature to secure your device, to configure accounts and lock screen passwords.

Equipped with Dolby Atmos the speakers is pretty loud and we really liked what we heard. Fast charging which is common these days is not present in K6 Note and the phone takes quite some time to charge. At the price of Rs. 13,999, the Lenovo K6 Note will be competing against Moto G4 Plus and Xiaomi Redmi Note 3.

Bottomline: The K6 Note handled multi-tasking, gaming and switching between apps smoothly without any heating issue despite coming with a mid-range Snapdragon 430 processor.

ASUS ZENFONE 3S MAX

— Ashok Pandey

Asus has fired the big battery smartphone market ablaze with its another massive battery phone Zenfone 3S Max. It's another smartphone of Zenfone series with Max power capability of 5000 mAh.

Looks similar, but not really...: In the first look, you may confuse between 3S Max and previous Zenfone 3 Max devices, as both share lots of design aesthetics, but the new version has various new tweaks. The front is completely covered with glass, but this time it gets a fingerprint scanner at the front in addition to the back, as was the case with previous devices. Moreover, you're going to miss three capacitive touch buttons placed below the screen, as these get placed on the screen. So the bottom bezel is still on the same size hosting fingerprint scanner.

The phone has 5.2-inch IPS screen with 720X1280p resolution which is lower than Lenovo K6 note, Honor 6X and Coolpad cool1, all three having 1080p. however, despite having a lower resolution, it produces great colors. The screen is vivid and bright, so you can enjoy games, movies and other tasks with ease. Even in direct sunlight, you can use the phone without any issue, but what really bothers me is the glass, which is reflective as well as retains fingerprints and smudges. The metallic shell is painted with gold color with sand finish, adding rich feel and look to the device. Thankfully, it won't capture smudges and scratches.

PixleMaster camera to capture detailed images: At the rear, it hosts 13 MP PixleMaster camera with several modes and settings. We captured several images and videos to check its performance. In daylight conditions, it was able to click quality photos with lots of details and rich colors. In low light conditions, images look grainy, though LED flash helped to capture decent photos.

Using different modes, such as super resolution, HDR, beautification etc. it brings more details to the images. For photography enthusiasts, it has pro mode as well. You can customize the camera at ISO, Focus and many other settings to click images as per your preference. The front 8 MP camera is great for selfies and groupies. It has beautification mode as well as several other effects that will really please selfie lovers.

Play games, have fun: The mobile is powered by octa-core processor clocking at 1.5 GHz, 3 GB RAM and Mali T-860MP2 GPU. It runs on latest Android 7.0 (Nougat) with the customized Asus ZenUI 3.0 which we saw in previous devices Zenfone 3 Max and Laser.

The phone can easily handle daily tasks and graphics-intensive games. We used the device for more than three weeks and stuffed it with several apps and games to test its real world performance. We browsed the internet, captured images and played games like Asphalt 8, NFS etc. There was no visible lag in performance. Even while switching between games, we didn't notice any lag. The speakers are placed on the bottom and are quite loud to enjoy music, games, and movies with friends and family. The sound quality is crisp with balanced bass and treble.

Powerful battery to last longer: The main attraction of the phone is the battery, it is powered by 5000 mAh battery which



Price: ₹14,999/-

SCORE

PRICE: 9/10

PERFORMANCE: 10/10

FEATURES: 8/10

Overall: 9/10

KEY SPECS: 5.2-inch IPS LCD screen (720 x 1280p), Android 7.0 (Nougat), Asus ZenUI 3.0, Octa-core 1.5 GHz Cortex-A53, Mali-T860MP2 GPU, 3GB RAM, 32Gb inbuilt memory expandable up to 256 GB, 13 MP rear and 8 MP front camera, 5000 mAh battery

PROS: Massive battery, camera, build quality

CONS: Only 720p screen



Pro Mode



Super Resolution



HDR

we saw in Asus Zenfone Max. In moderate usage, it lasted for more than two days. While playing intensive games, watching movies etc. it lasted for one day on a single full charge. In our video loop test, it lasted for 6 hours and 44 minutes while playing videos on YouTube with full brightness and sound. It is the best battery phone which we have reviewed in this price category in recent times.

Bottomline: In the 15K price range, the smartphone is one of the best battery phone backed by powerful hardware. You can capture quality images with a good amount of details and rich colors. Though the screen resolution is only 720p, this could be a great choice if you don't want to plug your phone to the charge everyday.

VIVO V5 PLUS

— Raj Kumar Maurya

Vivo has launched V5 Plus as the elite version of Vivo V5 with dual selfie camera in front and 64GB internal memory. Vivo V5 Plus is the world's first phone with front dual camera configuration. Let's see if adding dual selfie camera configuration has changed anything in the selfie as compared to the front camera on other smartphones.

Display and Design: Out of the box, the first thing in Vivo V5 Plus which grabs the attention is its stylish looks and rich feel. However, the front face, especially at the bottom, is similar to OnePlus 3.

The front panel of Vivo V5 Plus has a 5.5 inch 1080p Full HD and uses Corning Gorilla Glass 5 for security. The display also supports an 'Eye Protection Mode' feature that filters out the blue light to protect vision and prevents eye strain. The display is clearly visible under direct sunlight. Without any struggle, one can read the text easily. The front-facing cameras are on the left side of the earpiece and the moonlight flash is on the right side, above the screen. The fingerprint sensor is placed under the pressable home button on the front side flanked between navigation button.

Vivo V5 Plus Camera: As the V5 Plus is designed for selfie lovers, so first we talk about the 20MP + 8MP front facing the camera. It is capable of delivering amazing selfie shots. The camera has a Sony IMX 376 sensor with F/2.0 aperture and 5P lens. We used the phone for capturing selfies in different light conditions and it impressed us. The selfies in daylight have good detailing and natural color (little bit saturated). But the low light images are grainy. The front camera has LED flash, called as Moonlight Flash by Vivo. As compared to regular flashes coming in the phones, the Moonlight Flash is different. It is not going to produce any burnout or unnatural effect in your pictures in the low light. The flashlight allows you to take selfie shots with natural colors even when the lighting condition is not good. The front camera also has Face Beauty mode to soften the skin tone while you take selfie shots.

V5 Plus front camera also has a BOKEH effect feature that proves very handy to add a professional feel to your selfies. The BOKEH mode adds a blur effect to the image's background digitally. It means that even after capturing the image, you can shift the focus anywhere in the image. The front camera can also shoot 1080p videos.

The Vivo V5 Plus at the back side has 16MP PDAF rear camera with flash. The camera can be activated in as little as 0.7 seconds which is really good, thanks to its 4GB RAM. Due to PDAF technology, the camera of this device is able to autofocus on the objects faster than the smartphone cameras without PDAF technology. But still, if you compare the rear camera with OnePlus 3, the OnePlus 3 is far better than Vivo V5 Plus.

Vivo V5 Plus Performance & Software: Vivo's FunTouch 3.0 OS skin is wrapped around Android OS, v6.0 (Marshmallow). There are few elements in the FunToch OS which are similar to iPhone like shortcuts by swiping the lower panel, spotlight search, recent tasks and no app drawer. The UI offers smart gesture features such as smart wake where you can type letters on display to open predefined apps like 'c' for dialer, 'm' to play music, 'w' to open WhatsApp, etc.



Price: ₹27,980/-

SCORE

PRICE: 8/10

PERFORMANCE: 8/10

FEATURES: 8/10

Overall: 8/10

KEY SPECS: Qualcomm MSM8953 Snapdragon 625 Octa-core 2.0 GHz Processor, 4 GB RAM, 64 GB internal, 5.5-inch FullHD Display, 16 MP rear camera with flash, and dual 20 MP+8MP front cameras with flash, fingerprint sensor, Android v6.0, OTG

PROS: Design, 20MP +8MP front camera, quick fingerprint scanner, build quality, good speakers

CONS: No Type C port, a little high in price, still uses Android 6.0

Under the casing, the Vivo V5 Plus is powered by a Qualcomm MSM8953 Snapdragon 625 Octa-core 2.0 GHz Processor. On the other hand, for doing multitasking it has a 4GB RAM unexpandable internal 64GB internal memory. We used this phone for more than 8 days and played lots of videos and games on it. We tried some common games to heavy graphics consuming games such as Asphalt 8, but we didn't find any noticeable lag or glitches while running them with almost multiple apps running in the background.

With the AK4376 dedicated Hi-Fi audio chip, it gives you clear and boosted audio with both headphones and speakers. The inbuilt speaker was really loud enough for enjoying the music. With a 3,055mAh battery, we're able to get one and a half day backup on normal usage. However, the smartphone technology is moving towards the USB C type port whereas Vivo V5 Plus still has the microUSB port which disappoints us a little bit. You don't have to worry about fast charging as it has dual fast charging technology called Dual-engine quick Charging. We were really impressed with fast charging, it charged our device from 1% to 25% in about 15 minutes. In our battery test, we ran a 720p video and the battery ran for 7 hours & 15 minutes at full volume & brightness.

Bottomline: The Vivo V5 Plus has the stylish design and is backed by decent hardware which can handle various task. If you are a selfie lover, then this phone can be your choice. But in terms of hardware core configuration, the phone didn't impress us much. Also, the phone lacks the USB C type port.

NUBIA Z11 MINI

A phone with a good camera and design, but average performance

— Raj Kumar Maurya

Chinese smartphone manufacturer ZTE introduced their brand in India as Nubia Z9 and now they have come with Nubia Z11 mini. Right now, Nubia is not aiming for high-end smartphones; they are rather offering an affordable Android handset. Nubia Z9 was popular for its camera quality and we hope to get the same camera quality in Nubia Z11 mini. Let's see the efficiency of Z11 mini in terms of design, camera and performance.

Design and Display: When first time we saw the device, it gave the impression of being an iPhone with various design tweaks. The 2.5D metallic frame and black antennas look awesome. It has glass frame on both sides which gives it a premium and stylish look. At the front, it is protected by Corning Gorilla Glass 3. The color on 5.0 inches IPS LCD Full HD display of Nubia Z11 mini looks very natural and vibrant. Also, it has an inbuilt display color option that can customize the screen color from cooler to warmer.

Nubia hasn't compromised in the Camera department: It hosts 16-megapixel camera on the rear with f/2.0 and comes with phase detection autofocus capability. The camera lens is protected by the six-element sapphire glass, which means it won't get scratches. The camera captures amazing images in both daylight and night. Images come out with great details, rich colors and sharpness. The camera UI offers you several functions including time-lapse, slow motion, camera family and more. The front camera is also great in taking self-groupies. Overall the Nubia's Z11 mini camera is one of the best cameras in this price range.

Nubia OS: Z11 mini UI is based on Android 5.1 Lollipop, while majority of the phone are now coming with at least marshmallow. Nubia is still using Lollipop which bothers us a little bit. The interesting feature of Nubia Z11 Mini is the Edge, enabling the user to switch between various apps. You just need to swipe up and down from edges on both left and right sides. You can customize your experience. For instance, you can decide which app should open when you slide through the edges.

Average Performance: The stylish Z11 mini did pretty well in terms of performance. We didn't find any major performance problems but it did give us a little lag while playing games like asphalt 8. The customization of UI works well but sometimes it stops responding. Perhaps a few fixings are required. We expect Nubia will soon come with some patch updates. Coming to the call quality, we didn't find any call drop or network issue with this phone. For listening to your favorite music, the phone comes with DTS feature to enhance the audio quality in headphones as well as in Loudspeaker. Overall the clarity of sound is good but the loudness is average. It comes with a matte finish on the



Price: ₹12,999/-

SCORE

PRICE: 8/10

PERFORMANCE: 7/10

FEATURES: 8/10

Overall: 8/10

KEY SPECS: 5.00-inch 1080x1920 pixels resolution display, Processor 1.2GHz octa-core, Rear Camera 16-megapixel & Front Camera 8-megapixel, RAM 3GB, OS Android 5.1, Storage 64GB.

PROS: Good camera, OTG support, compact

CONS: Glossy back panel, average battery backup

Mention price fingerprint sensor. It works fine, but is a little less accurate and responsive as compared to another mobile in similar price category.

The phone is packed with 2800 mAh battery which is comparatively lower in power. During heavy usage, it was able to last only for 5-6 hours.

Bottomline: The Nubia Z11 Mini at 12,999 is a good phone in terms of specs, battery and camera. But it's not meant for the heavy user. If you are a normal user and want a good camera phone with a cool design then Nubia Z11 mini is one of the best.

MSI GE62VR APACHE PRO

Backed by powerful hardware, the beast offers immersive gaming experience

— Ashok Pandey

The gaming industry is stuffed with loads of devices and VR is new trend in this. VR devices are being built for smartphones, laptops, and other devices, but do you have a device that can support VR. MSI comes with another gaming device with various new features and VR support.

The specular design: It looks different with its raised lines on the lid making it slightly aggressive in look with a faux brushed aluminum motif. The outer shell looks premium with brushed aluminum finish on the top. The entire body is made with tough plastic however you won't feel it while holding in hands or using the device.

It is equipped with multi-color backlight keyboard allowing you to play even in dark. MSI partnered with SteelSeries to power the Apache Pro's keyboard. The backlight provides ample illumination as well as it boasts SteelSeries Engine 3 software enabling the user to customize key inputs, create macros, and save profiles, which are synced to and accessible from the cloud.

A windows-powered machine with several utilities: The gaming beast ships with Windows 10 operating system with additional features including Burn Recovery as well as several other utilities. Most of these can be accessed through MSI's Dragon Center. When we completed the setup, the machine asked for some updates for these apps, and we guess such updates keep coming.

One interesting thing about it – one can access Dragon Center using a smartphone. A free app is available that you can install and then look for Apache Pro on your network. But before that, you need to turn on the feature on in the Mobile Center tab. Once done you can connect your phone or tablet to perform different other functions.

Not so good sound: The laptop hosts four 2W speakers and 3W woofer which makes it quite loud but the sound is not crisp. Raising the volume leads to distortion and in lower volume pitch notes were so down. Though we were able to enhance the audio experience through the Nahimic Audio Enhancer software, but not much difference. We were able to tune up the sound a bit, yet missing the quality.

FHD display with great color reproduction: The gaming laptop is packed with a 15.6-inch 1080p eDP IPS-Level panel which produces rich colors and brightness, enabling you to enjoy different games with surprisingly great black levels. We played several games like Thief, Shadow of Mordor, NFS, etc. and enjoyed every bit of colors and black levels.

Great in handling various graphics intensive games: No use of buying a gaming laptop, if it can't handle high-end games. To check its potential we played several games including Shadow of Mordor, Thief, NFS and Tomb Raider. While playing these games we didn't notice any visible performance lag. With about 100 fps it was able to render the graphics beautifully. To go beyond, we ran all four games at the same time and played



Price: ₹1,39,900/-

SCORE

PRICE: 8/10
PERFORMANCE: 10/10
FEATURES: 9/10

Overall: 9/10

KEY SPECS: 15.6" FHD, Anti-Glare (1920*1080) eDP IPS-Level, Nvidia Geforce GTX 1060, 6GB GDDR5, Skylake i7-6700HQ+HM170, DDR IV 8GBX2, 256GB SSD + 1TB (SATA), Windows 10, 6 cell battery

PROS: Great gaming performance, multicolour backlit keyboard

CONS: Battery life

one while running rest in the background. Still, there was no issue with the performance.

While using with the laptop, we got about 5 hours of battery backup with moderate usage. But when we played some intensive games, it lasted for only about 3 hours. In our video loop test, the battery was able to play video for about 3 hours and 27 minutes over Wi-Fi with full brightness and volume.

Bottomline: MSI GE62VR 6RF Apache Pro is backed by a powerful combination of hardware. The Nvidia Geforce GTX 1060 GPU and 6 GB DDR5 RAM works virtually similar to the desktop to offer amazing gaming performance. People looking for a gaming beast must consider this but needs to compromise on battery life.

SPEAKERS

INTEX IT - 6050 SUF BT

— Ashok Pandey



Price: ₹6,600/-

SCORE

PRICE: 9/10

PERFORMANCE: 9/10

FEATURES: 10/10

Overall: 9/10

Intex doesn't require any introduction in the Indian marketplace. The company has been in India for a long time and has various products on offer ranging from mobile devices to TVs. Recently, we were asked to review Intex IT - 6050 SUF BT. It is a 5.1 home theatre with several attractive features.

Modest design and nifty connectivity options: Intex speaker set has a bold design in the front. Besides, the top shell gets a smooth finish. It has a wooden body and weighs close to 8.5kg. It features LED display. The speaker can be accessed from a range of up to 7 to 10 meters. Intex IT-6050SUF BT provides a (50W + 15W) X 5 output power. It comes with a remote control. The frequency unit of the main unit is 20Hz – 200Hz and that of the satellite unit is between 200Hz and 20KHz. It works on normal AC voltage. It supports a USB port, SD card slot, Bluetooth and has FM tuner. The speaker comes with support for AUX, which is compatible with DVD, PC and LCD TV.

Rich and loud sound to enjoy the music: We tested it on soundtracks with intense sub-bass content, such as DJ Magic Mike's "Feel The Bass." The speaker pumped out flawless bass with a lot of oomph and detail. The mid and treble ranges are well-defined and surprisingly, the sound is crisp and clear, even at low volume levels.

On soundtracks such as Titanium by David Guetta which features dance club style beats, the speaker produced high fidelity sound with attacking bass and oomph and sounded booming, making this melody truly enjoyable throughout. Sia's vocals were clearly audible in between the bass of this electric pop song. In piano numbers like Clair de Lune from Claude Debussy's the XBoom Thunder produced silent periods between sound without any hint of hissing or buzzing during these quiet

KEY SPECS: 50W sub woofer + 5X15W speakers, Bluetooth 3.0, FM Frequency Receiver 87.5MHz To 108MHz, supports, USB/SD/FM/BT/AUX, LED display, Full function remote control.

PROS: Great sound, crisp treble, enjoy high volume, wireless connectivity

CONS: Distortion on the high volume FLAC music

times, with higher register strings, bass, and vocals maintaining their presence in the spotlight.

Intex IT-6050 SUF BT can be used to hear the highs and lows, beats as well as the clear vocals. It has a balanced sound profile to enjoy different nodes of music. You can play songs from low volume to please your ears as well as on the high volumes to break the floor. On the high volumes, we were not able to notice any disturbing distortion in the sound however with some of the FLAC songs we did notice high distortion at certain frequencies. The base of the home theatre is quite impressive. We enjoyed it at every level. We found this speaker to be quite good with loud music.

It can be connected to wireless using your smartphone or other devices having Bluetooth connectivity and you can enjoy the music wirelessly. The wireless range is about 5 to 7 meters which is decent, but make sure to avoid obstacles for uninterrupted music.

Bottomline: Intex 5.1 home theatre could be the choice of hard rock music lover, looking for an affordable option. It has almost every type of connectivity as well as produces great sound on different levels.

HYPERX CLOUDX REVOLVER 'GEARS OF WAR' GAMING HEADSET

A powerful gaming headset with amazing sound and great comfort!

— Ashok Pandey



Price: ₹11,999/-

SCORE

PRICE: **8/10**

PERFORMANCE: **9/10**

FEATURES: **9/10**

Overall: **9/10**

A comfortable headset can enhance your gaming experience without disturbing others. HyperX, a division of Kingston Technology, is one of the prominent names in the gaming industry. It has a wide range of quality gaming gears. Recently, they announced their CloudX Revolver Gears of War gaming headset. Here is what we found during the review of this product.

Design and comfort: The headset is co-designed by Microsoft and The Coalition, the studio developing Gears of War 4 to offer the fans a complete gaming set up that shows their Gears with pride. Microsoft has tested and approved this headset with additional compatibility for Windows. It comes with a 3.5mm (4 Pole) plug and 2M PC extension cable. The in-line audio control makes it easy to adjust the volume and mute the microphone right from the cable. HyperX CloudX Revolver Gears of War features a genuine leather headband and HyperX memory foam to offer great comfort for hours. The outer shell is made with solid steel for long-lasting durability and the detachable noise-cancellation microphone. The headset is certified by TeamSpeak and Discord and compatible with Skype, Ventrilo, Mumble and Raid Call.

Ultimate gaming experience: We used the headphone for more than three weeks and for different purposes, including games and music. On soundtracks with intense sub-bass content, like DJ Magic Mike's "Feel The Bass," the speaker

KEY SPECS: 50mm with neodymium magnets, 12Hz–28,000 Hz frequency response, 33Ω impedance, electret condenser microphone

PROS: Innovative design, comfortable, solid build, great sound, compatible with most of the devices

CONS: Microphone could be better

pumped out flawless bass with a lot of oomph and detail. The mid and treble ranges are well-defined and the vocals sound crisp and clear. The great bass and treble also came out with amazing balance while playing games. Even on low notes, the headset sound quality was awesome. We were able to equally enjoy it at loud volume levels. We were not able to notice any disturbing distortion on any level of frequencies.

The microphone is not that much impressive but is decent to use. We plugged it in different devices including PC, smartphone, etc. It worked well but the microphone wasn't able to remove the noise in the background. However, our voice was quite clear at the another end.

Bottomline: Incredible gaming headset from HyperX with awesome sound and great comfort. It is one of the best headsets for gaming enthusiasts, only microphone disappointed with poor noise cancellation.

REPEATER

LINKSYS RE4100W N600

Dual-Band Wireless Range Extender

— Tushar Mehta



Price: ₹4,150/-

SPEEDTEST		
PING	DOWNLOAD	UPLOAD
1,058 ms	1.01 Mbps	0.83 Mbps
Without Linksys		
43 ms	9.32 Mbps	0.48 Mbps
With Linksys		

SCORE

PRICE: 8/10

PERFORMANCE: 9/10

FEATURES: 10/10

Overall: 9/10

Wi-fi range extenders such as Linksys N600 help users extend the range of possibilities the web can offer. If you've ever setup a wireless router, stretching your connection's skirts using the Linksys Wi-fi range extender will be a duck soup job. You must first connect to the N600 and follow the setup process which includes just one extra step – bridging your native Wi-fi network with Linksys.

After setting up the N600, you can directly plug it into a wall socket keeping in mind the mal-wifi-nourished area. It features support for dual-band wi-fi i.e. 2.4 GHz and 5 GHz. If you are unable to setup the device using Wi-fi, you can also plug it directly into your PC or laptop using the Ethernet port, which can also be used to power an old PC (which lacks wi-fi) with the internet. It features a WPS button for secure direct connections. (WPS or Wi-Fi Protected Setup allows users to hide their network from public visibility and add 2-step authentication).

An alluring feature is 3.5 mm jack for Wi-fi audio. Users can hook up their speakers to play audio wirelessly. This can allow users to setup the N600 at the heart of their living room or with home theater setup without wires. The number of smart devices penetrating our houses, such as the Oakter Smart Home kit which we review in this month's edition of PCQuest, is increasing and these depend on a wireless connection. It can enable an IoT ecosystem at home.

On the performance front, Linksys RE4100W N600 is a powerful warrior. It features support for up to 300 MBPS. Its LED light indicates whether the RE4100W is receiving ample signals or not. For strong signal, it beams green while during weak signals it glows amber. The image above shows how it performed on our 10 Mbps connection. We used 2.4 GHz band and the radius of Wi-fi network was further extended by nearly 40 feet.

KEY SPECS: Network Standard: IEEE 802.11a/b/g/n, Dual Frequency Band - 2.4 & 5 GHz, Max Transfer Rate 300 Mbps, Wi-fi Audio

PROS: Efficient, Play audio wirelessly

CONS: Initial setup may require help from your techie friend

Bottomline: Linksys is a reputed name in wireless networking and the Linksys RE4100W stages an impressive performance for what it claims to achieve. With an increase in the number of devices that use Wi-fi, such as smart Air purifiers and smart locks, this can be a useful advantage to leverage maximum network connectivity.

GRAPHICS CARD

AMD POWERCOLOR RADEON RX 470 RED DEVIL 4GB

A Great Option For Gamers Available At Affordable Price

— Ashok Pandey



Price: ₹15,990/-

SCORE

PRICE: 10/10

PERFORMANCE: 10/10

FEATURES: 9/10

Overall: 10/10

If you are a gamer, a powerful GPU is the prominent requirement but sometimes cost also matters. The new AMD GPU comes at a decent price but what about the gaming performance, let's find out.

The Radeon RX 470 uses 'binned' Polaris 10 chips. It comes pre-overclocked to 1,270MHz with 1,750MHz memory. It has a dual-fan design with nine blades on each. The GPU has a good design with a new cooler, OC mode and added a back-plate to it. It is one of the good GPUs that delivers good performance and looks cool.

You can expand your gaming field with the card as it supports multiple displays. MAD's unified graphics processing and compute cores improves the overall performance and efficiency. It also supports the latest stereoscopic 3D content and display technologies enabling you to play 3D games, watch Blu-ray 3D videos, and edit 3D photos on your 3D Monitors, TV, or projector.

It is equipped with advanced GDDR5 memory that offers the highest memory bandwidth of any memory technology today. The card supports the VR so you can also enjoy games using your VR headset. In terms of power consumption, our test system reached a peak power draw of 236W when utilizing the GPU at the fullest. This is likely due to the overclocking settings applied by PowerColour.

We tested the GPU on our test bed (Intel Pentium Processor G3420 (3M Cache, 3.20 GHz) CPU on Asus motherboard, 4 GB DDR3 Zion RAM, Hitachi 500GB SATA HDD, Phillips LED monitor running on Windows 7 OS). The graphics card is capable enough to handle any graphic intensive game. To test the performance we played some games on it, including Thief, Tomb Raider, NFS, etc. This handles all the games easily and there was no lag in the performance. We also used a VR headset to check its VR ability and here as well it easily manages the virtual game.

Bottomline: The Red Devil is such a devil in terms of performance at this price. It is one of the perfect choices for serious gamers with a limited budget.

KEY SPECS: GCN Architecture 4th Generation, 2048 Stream Processors, 1206 MHz clock speed, up to 4.9 TFLOPS, 4 GB memory, GDDR5

PROS: Price, overclocking, VR support

CONS: None

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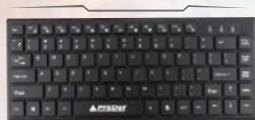


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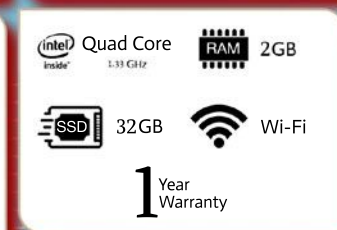
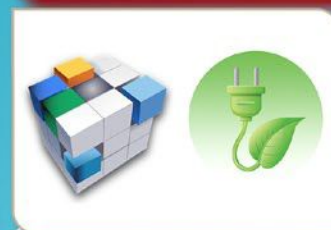
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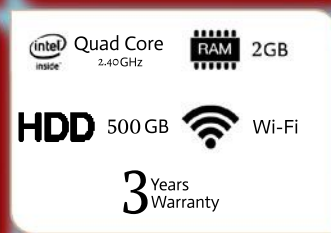
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