



Vidya Vikas Education Trust's

**Universal College of Engineering**



**ELECTROBUZZ**

**ELECTRONIC DEPARTMENT**

**MAGAZINE**

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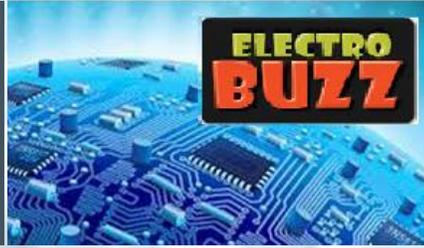
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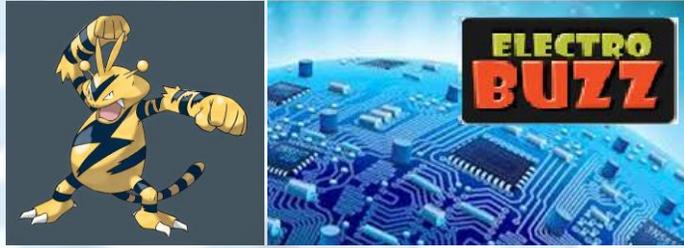
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## TECHNOLOGIES THAT WILL SHAPE OUR LIVES IN 2019

The world of technology and innovation does not stay still for one moment. All around the world, there are different time zones and people are creating solutions that are solving problems. Business models are changing and therefore businesses of all sizes should be aware of and profit from.

Technology delivered whether by cloud based or managed services are at the forefront for the 2019 trend. The application of game changing technologies is becoming ever more pervasive and their adoption is growing steadily all over the world. While AI, Block chain, Robotics and Virtual Reality are going to be accelerated in 2019. Disruptive technology trends will propel the future; no industry will go untouched by digital transformation. One of the innovative technologies that have seen a lot of investment over the last year is block chain. And over the next few years we expect identity management to move into a block chain environment.

Artificial intelligence and machine learning will play a significant role in how IT teams can engage and empower entire organisations. Alongside using AI, applications themselves will continue to get more intelligent and help improve the user experience and streamline business processes.

The concept of human mobility is fuelling the future. A radical transformation in the automotive industry is refining and redefining existing technologies and introducing new, exciting concepts like artificial intelligence and the connected car to give us a driving experience that will be like nothing we've ever known.

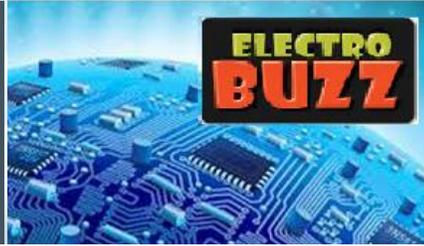
Robotics is set to grow exponentially over the coming year which will revolutionise the customer experience. We are seeing a rapid adoption of robotics in industries and into new markets. There will be a significant adoption in markets like food and beverage, warehousing and logistics. Robotic firms are producing robots that look more human like and comfort levels will be dependent on culture and location.

By looking at these trends and adopting them to your organisation, you will give yourself a chance to outperform the competition.



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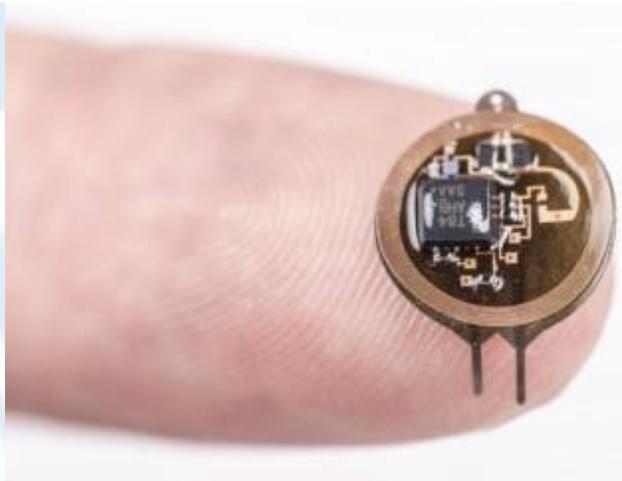
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Tech Trends for 2019 are:

- Artificial Intelligence
- The Connected Car / Self Driving Cars
- Vehicle Ownership Dynamics / New Business Models
- Block Chain
- Robotics
- Healthcare
- Wireless networking (5G, 4G)

## **CONTROLLING NEURONS WITH LIGHT – BUT WITHOUT WIRES OR BATTERIES**



University of Arizona biomedical engineering professor Philipp Gutruf is first author on the paper fully implantable, optoelectronic systems for battery-free, multimodal operation in neuroscience research, published in *Nature Electronics*.

"We're making these tools to understand how different parts of the brain work," Gutruf said.

Optogenetics is a biological technique that uses light to turn specific neuron groups in the brain on or off. "The advantage with optogenetics is that you have cell specificity: You can target specific groups of neurons and investigate their function and relation in the context of the whole brain." In optogenetics, researchers load specific neurons with proteins called opsins, which convert light to electrical potentials

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that make up the function of a neuron. When a researcher shines light on an area of the brain, it activates only the opsin-loaded neurons.

The first iterations of optogenetics involved sending light to the brain through optical fibers, which meant that test subjects were physically tethered to a control station. Researchers went on to develop a battery-free technique using wireless electronics, which meant subjects could move freely. But these devices still came with their own limitations (bulky and often attached visibly outside the skull, didn't allow for precise control of the light's frequency or intensity, and they could only stimulate one area of the brain at a time).

#### **Taking More Control and Less Space**

"With this research, we went two to three steps further," Gutruf said. "We were able to implement digital control over intensity and frequency of the light being emitted, and the devices are much miniaturized, so they can be implanted under the scalp. We can also independently stimulate multiple places in the brain of the same subject, which also wasn't possible before." The ability to control the light's intensity is critical because it allows researchers to control exactly how much of the brain the light is affecting.

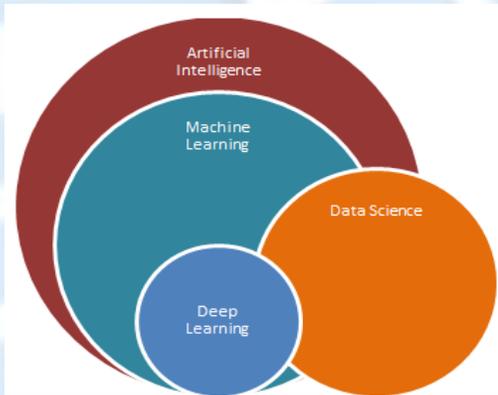
The wireless, battery-free implants are powered by external oscillating magnetic fields, and, despite their advanced capabilities, are not significantly larger or heavier than past versions. In addition, a new antenna design has eliminated a problem faced by past versions of optogenetic devices, in which the strength of the signal being transmitted to the device varied depending on the angle of the brain: A subject would turn its head and the signal would weaken. "This system has two antennas in one enclosure, which we switch the signal back and forth very rapidly so we can power the implant at any orientation," Gutruf said. "In the future, this technique could provide battery-free implants that provide uninterrupted stimulation without the need to remove or replace the device, resulting in less invasive procedures than current pacemaker or stimulation techniques." Devices are implanted with a simple surgical procedure similar to surgeries in which humans are fitted with neurostimulators, or "brain pacemakers." They cause no adverse effects to subjects, and their functionality doesn't degrade in the body over time. This could have implications for medical devices like pacemakers, which currently need to be replaced every five to 15 years.

The paper also demonstrated that animals implanted with these devices can be safely imaged with computer tomography, or CT, and magnetic resonance imaging, or MRI, which allow for advanced



insights into clinically relevant parameters such as the state of bone and tissue and the placement of the device.

## **MACHINE LEARNING VERSUS DATA SCIENCE**



Machine learning has seen much hype from journalists who are not always careful with their terminology. Machine learning refers to a specific form of mathematical optimization: getting a computer to perform better at some task, through training data or experience, without explicit programming. This often takes the form of building a model based on past cases with known outcomes, and applying the model to make predictions for future cases, finding ways to minimize a numerical “error” or “cost” function representing how much the predictions mismatch reality.

Notice that some important business activities appear nowhere in this definition of machine learning:

- Assessing whether data is suitable for a purpose
- Formulating an appropriate objective
- Implementing systems and processes
- Communicating with disparate stakeholders

The need for these functions led to the recognition of data science as a field. The Harvard Business Review tells us that the “key skills for data scientists are not the abilities to build and use deep-learning infrastructures. Instead they are the abilities to learn on the fly and to communicate well in order to answer business questions, explaining complex results to nontechnical stakeholders.” Other authors agree: “We feel that a defining feature of data scientists is the breadth of their skills — their ability to single-handedly do at least prototype-level versions of all the steps needed to derive new insights or build data products.” Another HBR article affirms, “Getting value from machine learning isn’t about fancier algorithms — it’s about making it easier to use.... The gap for most companies isn’t that machine learning doesn’t work, but that they struggle to actually use it.”

Machine learning is an important skill for data scientists, but it is one of many. Thinking of machine learning as the whole of data science is akin to thinking of accounting as the entirety of running a



profitable company. Further, the skills gap in data science is largely in areas complementary to machine learning — business sensibility, statistics, problem framing, and communication.

## **ERICSSON SETS UP NEW ARTIFICIAL INTELLIGENCE LAB IN BENGALURU; TO HIRE 150 ENGINEERS IN 2019**

Ericsson has set up a Global Artificial Intelligence Accelerator (GAIA) in Bengaluru, India to focus on research and development in Artificial Intelligence (AI) and Automation.



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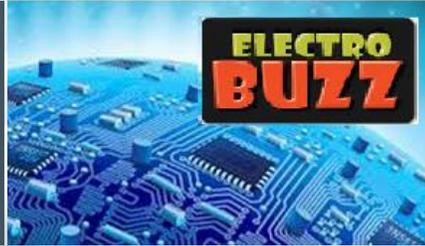
The new innovation hub will help create 150 new jobs for data scientists, engineers, ML/AI architects, and software developers in 2019. Ericsson already has Global Artificial Intelligence Accelerators in the

US and Sweden.

Globally, Ericsson will employ over 300 data scientists, data engineers, ML/AI architects, and software developers across its Global AI accelerators. The Company intends to explore partnerships with telecom service providers, industry stakeholders, startups and academia to bolster innovation.

The vendor said that the facility will be key in accelerating the execution of Ericsson's focused strategy by leveraging AI and Automation technologies to create data driven, intelligent, and robust systems for automation, evolution, and growth.

"The setting up of Global AI Accelerator in India is testament to Ericsson's long-term commitment to India, to the rich talent pool as well as the vibrant ecosystem available in the country. GAIA has been set up as a central unit to be able to accelerate projects across Ericsson's portfolio across the 4 Business Areas as well as customer projects across the 5 Market Areas," said Sanjeev Tyagi, Head of Ericsson R&D



Bengaluru. Ericsson said that several projects are already underway within the company to bring in AI and Automation capabilities to its product portfolio across Business Areas.

"With the advent of 5G and IoT, we expect to see an explosion in the number of potential ways in which we will use the networks of the future. The traditional methods of managing and running networks will no longer scale. AI/ML driven automation will be a necessity to manage these networks. These data-centric technologies also open up the potential to tap new revenue generating opportunities and business models for telecom service providers," Tyagi added.

## **13-YEAR-OLD INDIAN BOY IN DUBAI OWNS SOFTWARE DEVELOPMENT COMPANY**



13-year-old Indian boy in Dubai, who developed his first mobile application four years ago, also owns a software development company.

Aadithyan Rajesh, a student from Kerala, was only nine years old when he developed his first mobile application as a hobby to beat boredom and also has been designing logos and websites for clients. The tech wizard, who started using a computer when he turned five, has finally launched his own company 'Trinet Solutions' at the age of 13, the Khaleej Times reported. Trinet

has a total of three employees, who are friends and students from Aadithyan's school.



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## **ELECTION RESULT TRENDS: CONGRESS LEADS BJP IN RAJASTHAN AND CHHATTISGARH, CLOSE FIGHT IN MP**



Early counting trends on Tuesday showed the Congress enjoying solid leads in Rajasthan and Chhattisgarh, and locked in a neck-and-neck race with the ruling BJP in Madhya Pradesh. At the time when this story was last updated, the Congress, with leads in 108 **Rajasthan** seats, was ahead of the BJP by 32 seats.

In **Chhattisgarh**, the Grand Old Party was leading in 59 seats, and was ahead of the BJP by 35. The margin was much narrower in **Madhya Pradesh**, where data was available for 220 out of 230 seats. With leads in 109 seats, the BJP was slightly ahead. In **Telangana**, the Telangana Rashtra Samithi led the "mahakutami" alliance between the Congress, the Telugu Desam Party

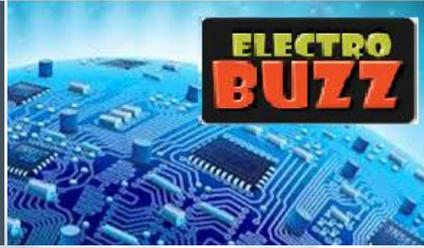
and two other outfits by a whopping 73 seats. The TRS was ahead in 89 seats. In **Mizoram**, the Mizo National Front was leading in 16 seats, and the Congress, in eleven.

The outcomes in Rajasthan, Chhattisgarh and Madhya Pradesh, the three states governed by the BJP, are crucial for both the BJP and the Congress. A win in any of these three BJP-ruled states would mark Rahul Gandhi's first major victory as Congress president. India's ruling party will be eager to avoid losing ground in the Hindi belt ahead of the general election due by May 2019, and its arch-rival will be keen to improve its dwindling presence on the political map.

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## **INDIA WON FIRST EVER TEST SERIES IN AUSTRALIA AFTER SYDNEY TEST ENDS IN A DRAW**



India vs Australia: India (626/7) drew with Australia (300 and 6/0). India won their first ever Test series in Australia after winning Tests in Adelaide and Melbourne. Australia had won the second Test in Perth while the SCG Test ended in a draw. India have toured Australia since 1947 but never before managed to win a series in the country. But it all changed this time as Virat Kohli led his side to 2-1 series victory after winning the first Test in Adelaide and the third Test in

Melbourne. Virat Kohli then became the first Indian captain since Kapil Dec in 1986 to enforce the follow-on in Australia

Mayank Agarwal, playing only his second Test, made 77 to lay the foundation for the rest of the Indian batting line-up. But Cheteshwar Pujara, the highest scorer in the series, played another innings to remember. Before SCG, Pujara already had two hundreds under his belt. But he was not to be satisfied with that. Dropped from the team for the first Test in England, Pujara has been India's second best batsman coming up to the Australia series left behind Virat Kohli in the run-scoring charts. Pant finished the series as the second highest run-scorer, ahead of Kohli. He became the only Indian wicketkeeper to score a hundred in Australia and only the fourth Indian wicketkeeper to score over 150 in Tests.

Rain arrived, as predicted on Saturday. Despite poor weather and bad light hampering India's progress over the weekend, Kuldeep Yadav picked up a historic five-wicket haul to bowl Australia out for 300. Jasprit Bumrah and Mohammed Shami were rewarded with five-wicket hauls.

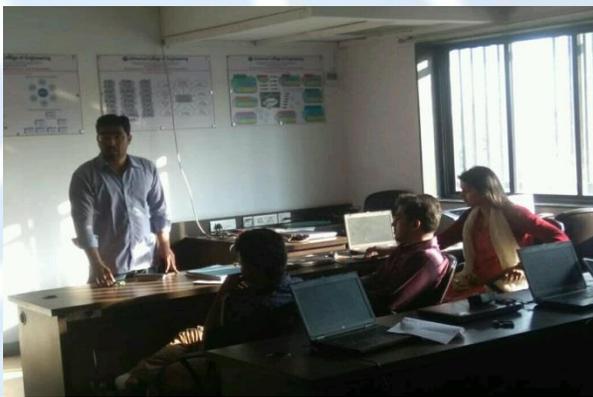


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## **WORKSHOP ON ROBOTICS AND ARDUINO BOARD FOR FACULTIES**



EXTC and Electronic department has conducted workshop for faculties on Arduino Board and Robotics. Mr. Sandeep Dubey and Mr. Gaurav Shette along with two students of department has carried out workshop. Arduino Uno has been used to interface LED and LCD with Arduino board. Workshop on wired as well as wireless robotics (for wireless Bluetooth module has been used) has been conducted.



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