K.L.N. College of Engineering

i'Storm

Department of Information Technology

SPECIAL INTEREST GROUP

LIVE WITH TECHNOLOGY

PRINCIPAL MESSAGE

It is a matter of great pride and satisfaction for KLN COLLEGE OF ENGINEERING to bring out the News Letter 'ISTORM' Released from the Department of Information Technology. The College has made tremendous progress in all areas-academic, non-academics, capacity building relevant to staff and students. The College has achieved another milestone in getting NBA (National Board of Accreditation).I am confident that this issue of Department News Letter will send a positive signal to the staff, students and the person who are interested in the Technical education and Technology based activities. A News Letter is like a mirror which reflects the clear picture of all sorts of activities undertaken by a Department and develops writing skills among students in particular and teaching faculty in general. I congratulate the Editorial Board of this News Letter who have played wonderful role in accomplishing the task in Record time. I express my deep sense of gratitude to Dr.N.Balaji, HOD/IT under whose guidance this Technical work has been undertaken and completed within the stipulated time. Also my heartfelt Congratulations to staff members and Students for their fruitful effort. With Best Wishes.

PRINCIPAL

Dr.A.V. RAMPRASAD

THE EDITOR'S DESK

It gives me immense pleasure to note that response to this newsletter of our department **i'STORM** has been overwhelming. The wide-spectrum of articles in different sections gives me a sense of pride that our students and professors possess creative potential and original thinking in ample measures. Each article is entertaining, interesting and absorbing. I applaud the contributors for their stimulated thoughts and varied hues in articles contributed by them. Commendable job has also been done by the Editorial Board in planning for and producing the Newsletter. My congratulations to the team who took the responsibility for the arduous task most effectively. I am hopeful that this small piece of technical work shall not only develop the taste for reading among students but also develop a sense belonging to the institution as well.

H.O.D (I.T)

Dr.N.Balaji

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ICON OF THE MONTH

SUNDAR PICHAI

Introduction:

Pichai Sundararajan Known as **Sundar Pichai**, is an Indian businessman and a **Senior Vice President at Google**, where he oversees Android, Chrome, and Google Apps.

Born in **Tamil Nadu**, he did his early schooling at Jawahar Navodaya Vidyalaya and Padma Seshadri Bala Bhavan, both in **Chennai**. He earned his **Bachelor of Engineering** degree from *IIT Kharagpur* in ***Metallurgical Engineering***. He holds an **M.S.** from *Stanford University* and an **MBA** from the *Wharton School of the University* of **Pennsylvania**.

Pichai joined Google in 2004, where he led the product management and innovation efforts for a suite of Google's client software products, including Google Chrome and Chrome OS, as well as being largely responsible for Google Drive. He went on to oversee the development of different apps like Gmail and Google Maps. On 19 November 2009, Pichai gave a demonstration of Chrome OS and the Chrome book was released for trial and testing in 2011 and released in public in 2012.

On 13 March 2013, Pichai added Android to the Google products he oversees. Android was formerly managed by **Andy Rubin** He was rumored to be one of the contenders for the CEO position of Microsoft in 2014.

The second most important person at Google:

Pichai, who has an educational background in business administration, has worked for Google since 2004. He started as a **product manager for Google Toolbar**, an extension that Internet Explorer users could install for making quick Google searches. It was a pretty not much better job at the time, but he proved he could build strong relationships with other companies and managed to grow Toolbar's user base to about one in four web users by 2006. **Marissa Mayer** eventually made him the **director of product management** and **Larry Page** immediately promoted Pichai to a **senior vice president position** when he took the CEO spot back in 2011.

Pichai was then appointed as Google's new Product Chief by CEO Larry Page on 24 October, 2014

Pichai The Most Wanted:

Many Google employees picture Pichai as being the next CEO, despite the fact that he's not a technological visionary. He's like the Tim Cook to Apple's Steve Jobs: Not necessarily a man with a grand creative vision about how

the company will change the world, but one that knows how to lead.

When Microsoft was looking for a replacement for former CEO Steve Ballmer, the company reached out to Pichai as a possible candidate. Twitter also tried to poach him to be a head of product in 2011.

Pichai & Google:

Pichai's team was responsible for launching Google's Chrome browser in 2008. Pichai had the tough job of calling up Google's partners - like Apple, which makes Safari, and Mozilla, which makes Firefox - to make sure that those relationships remained solid even though Google was releasing a competitive product. He managed to handle the situation extremely diplomatically.

One of Pichai's toughest jobs has been trying to turn Google's Chrome book laptops into mainstream products.

Ramesh Kumar,
Final Year.

RECENT TRENDS

GOOGLE DRIVELESS CAR

Introduction:

The **Google Self-Driving Car** is a project by Google that involves developing technology for autonomous cars, mainly electric cars. The software powering Google's cars is called Google Chauffeur. Lettering on the side of each car identifies it as a "self-driving car". The project is currently being led by Google engineer Sebastian Thrun, former director of the Stanford Artificial Intelligence Laboratory and co-inventor of Google Street View. Thrun's team at Stanford created the robotic vehicle Stanley which won the 2005 DARPA Grand Challenge and its US$2 million prize from the United States Department of Defense. The team developing the system consisted of 15 engineers working for Google, including Chris Urmson, Mike Montemerlo, and Anthony Levandowski who had worked on the DARPA Grand and Urban Challenges.

In May 2014, Google presented a new concept for their driverless car that had neither a steering wheel nor pedals, and unveiled a fully functioning prototype in December of that year that they planned to test on San Francisco Bay Area roads beginning in 2015.Google plans to make these cars available to the public in 2020.

Technology:

The project team has equipped a number of different types of cars with the self-driving equipment, including the Toyota Prius, Audi TT, and Lexus RX450h, Google has also developed their own custom vehicle, which is assembled by Roush Enterprises and uses equipment from Bosch, ZF Lenksysteme, LG, and Continental.

Google's robotic cars have about $150,000 in equipment including a $70,000 LIDAR system. The range finder mounted on the top is a Velodyne 64-beam laser. This laser allows the vehicle to generate a detailed 3D map of its environment. The car then takes these generated maps and combines them with high-resolution maps of the world, producing different types of data models that allow it to drive itself.

Road testing:

Google's vehicles have traversed San Francisco's Lombard Street, famed for its steep hairpin turns, and through city traffic. The vehicles have driven over the Golden

Gate Bridge and around Lake Tahoe.The system drives at the speed limit it has stored on its maps and maintains its distance from other vehicles using its system of sensors. The system provides an override that allows a human driver to take control of the car by stepping on the brake or turning the wheel, similar to cruise control systems already found in many cars today.

In April 2014, the team announced that their vehicles have now logged nearly 700,000 autonomous miles (1.1 million km).In late May, Google revealed a new prototype of its driverless car, which had no steering wheel, gas pedal, or brake pedal, being 100% autonomous.

In June 2015, the team announced that their vehicles have now driven over 1 million miles, stating that this was "the equivalent of 75 years of typical U.S. adult driving", and that in the process they had encountered 200,000 stop signs, 600,000 traffic lights, and 180 million other vehicles. Google also announced its prototype vehicles were being road tested in Mountain View, California. During testing, the prototypes' speed cannot exceed 25 mph and will have safety drivers aboard the entire time.

Incidents:

As of June 2015, Google's 23 self-driving cars have been involved in 12 minor traffic accidents on public roads, but Google maintains that in all cases the vehicle itself was not at fault because the cars were either being manually driven or the driver of another vehicle was at fault. In 2010, an incident involved a Google driverless car being rear-ended while stopped at a traffic light; Google says that this incident was caused by a human-operated car. In August 2011, a Google driverless car was involved in a crash near Google headquarters in Mountain View, California; Google has stated that the car was being driven manually at the time of the accident.

Limitations:

As of August 28, 2014 the latest prototype has not been tested in heavy rain or snow due to safety concerns. Because the cars rely primarily on pre-programmed route data, they do not obey temporary traffic lights and, in some situations, revert to a slower "extra cautious" mode in complex unmapped intersections.

Conclusion:

Thus the Google self-driving cars are very useful as well as more helpful to the present generation and reduces our work and time.

A.Subashri,
Second year.

CURRENT JOB TRENDS IN COMPUTER PROGRAMMING AND IT

When computer technology first emerged employment in the field was limited almost exclusively to academics. However, jobs in information technology became much more diverse as the rapidly advancing technology became part of many different industries. Today opportunities for **computer programmer employment** span almost every industry. **Current job trends in IT** are expanding into new areas including mobile technology, healthcare, and advertising. Find out more about the **future of programming jobs** in these industries below.

Mobile Technology Development:

There's no denying mobile internet usage is exploding. According to data compiled by Super Monitoring, 1.2 billion people accessed the web from mobile devices and mobile-based searches made up one quarter of all searches in 2013. The average consumer actively uses 6.5 apps throughout a

30-day period and 80 percent of mobile time is spent in apps. The growth in this area means there is a huge amount of opportunity for computer programmers to develop mobile solutions such as applications, corporate portals, mobile websites, and mobile-based social media networks.

Electronic Healthcare Records:

The increasing adoption of electronic healthcare records is also affecting information technology careers. Under the Health Information Technology for Economic and Clinical Health (HITECH) Act the federal government is spending $25.9 billion on promoting and expanding the adoption of healthcare information technology. As more and more medical facilities switch over to electronic record keeping the demand for **information technology professionals** with experience developing, maintaining, and protecting these systems will increase. Mobile and healthcare trends are also combining. A 2012 survey by Physicians Practice shows 62.6 percent of healthcare providers use mobile devices such as smartphones and tablets to sync up with **electronic healthcare records** in the performance of their job.

Digital Advertising:

According to IAB's Internet Advertising Revenue Report, during the first six months of 2013 online advertising saw double digit growth compared to 2012 and mobile ad revenue grew 145 percent over the previous year. As the advertising industry continues to shift budgets to digital channels there are many more opportunities available for computer programmers and information technology professionals in this industry. From developing new ad tracking software to troubleshooting a crashed website, the advertising industry needs more technical specialists than ever before. As computer systems are beginning to be built into everything from refrigerators to wrist watches, the future of programming jobs looks bright. The U.S. Bureau of Labor Statistics predicts that overall employment of computer programmers will grow 8 percent between 2012 and 2022. Visit the Bureau's Occupational Outlook Handbook to learn more about opportunities in computer programming and information technology.

Aarthy.M.G,
Second Year.

2015'S MOST CRITICAL INFORMATION TECHNOLOGY TRENDS

'The IT industry is growing at an exponential rate, with demand, investment and technological capability the three pillars of support driving the sustainability in growth'

Technology was dominated by several prevalent trends in 2014 – from the Internet of Things (IoT) and big data to the cloud and cyber security, it seems like there was barely a day without one of these trends creeping up in the news.

Now we have entered 2015, these trends are still at the forefront of discussion, with many exciting opportunities, innovations and iterations being predicted for this year.

Internet of Things investment will continue to increase

In 2014 there was a rapid increase in IoT solutions being deployed to advance business intelligence. ABI Research reported a 20% increase in IoT connected devices in 2014 from 2013. This year, Cisco predicts there will be 25 billion connected devices, which will

double to 50 billion by 2020. Information Age suggests IoT will revolutionize business by allowing companies to improve value propositions, engage with customers on levels previously unavailable and build entirely new revenue streams.

2015 technology trends – what are the security implications?

So far, investment in IoT has mainly come from the IT and telecoms industry, which will naturally benefit from the increase in data generated and application capabilities for mobile devices. In 2015, spectators predict investment in IoT will increase outside this industry. The retail industry is one sector in particular that is looking to tap into sensor data generated via wearable technology to provide highly targeted products and services to their customers.

As businesses look to IoT technologies to provide more insight, there is an ever-increasing demand for analysts capable of transforming IoT data into actionable business intelligence. There is a shortage in data scientists, for example, with positions increasing in the UK by a staggering 1005% over the last two years. This makes data science one of the fastest growing and in-demand professions in the UK to date, and is predicted to increase further going forward into 2015.

The 2015 cyber security roadmap:

As we look forward to the year ahead there are many fantastic opportunities in IT to look forward to – from the existing trends of 2014 to the emerging technologies yet to be discussed. The IT industry is growing at an exponential rate, with demand, investment and technological capability the three pillars of support driving the sustainability in growth. However, the barriers to the industry are clear and present dangers. The shortage in skills and talent capable or realizing the expectations for these pressing technologies must be addressed on an educational, cultural and organizational level.

Nurturing computing skills must be as core to the UK syllabus as English, Math and Science to provide the next generation with the tools that they will need in their future careers, no matter the profession.

Culturally, there appears to be a strong requirement to make a career in IT more attractive to young women. A study by the Joint Council for Qualifications found less than 8% of last year's 'A' Level computing students were female and declining still. From a total of 4,171 students studying Computing, only 314 were female. That's a 75% decrease over the last 10 years. These figures are concerning to say the least with the skills gap in this sector increasing.

Keerthana,
Second Year.

ARTIFICIAL NEURAL NETWORKING

Introduction:

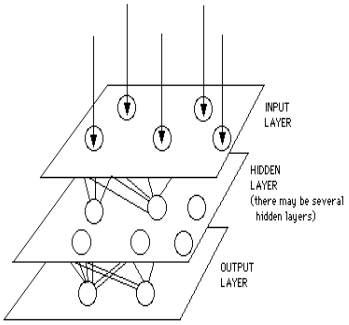
The first step toward artificial neural networks came in 1943 when **Warren McCulloch**, a neurophysiologist, and a young mathematician**, Walter Pitts**, wrote a paper on how neurons might work. They modelled a simple neural network with electrical circuits. Neural networks, with their remarkable ability to derive meaning from complicated or imprecise data, can be used to extract patterns and detect trends that are too complex to be noticed by either humans or other computer techniques.

The field of ANN went through a dormant period during the 1970's, because the early single-layer models were fundamentally flawed. Soon after, some multi-layer and trainable ANN models emerged in the early 1980's. Despite having some inherent limitations, ANNs have been increasingly popular since then. They are feasible for those business applications which require the solution of very complex system of equations recognizing patterns from imperfect inputs, and adapting decisions to changing environment. Philip D. Wasserman of ANZA Research, Inc. envisions **"artificial neural networks taking their place alongside**

of conventional computation as an adjunct of equal size and importance". Indeed, digital computers will always be needed to compute payrolls, manage inventory, and schedule production. ANN software packages become increasingly user-friendly, they will attract more and more novice users.

What is Artificial Neural Network?

Whenever we talk about a neural network, we should more popularly say —Artificial Neural Network (ANN) , ANN are computers whose architecture is modelled after the brain. They typically consist of hundreds of simple processing units which are wired together in a complex communication network. Each unit or node is a simplified model of real neuron which sends off a new signal or fires if it receives a sufficiently strong Input signal from the other nodes to which it is connected.



Basically, all artificial neural networks have a similar structure or topology as shown in Figure1. In that structure some of the neurons interfaces to the real world to receive its inputs. Other neurons provide the real world with the network's outputs. This output might be the particular character that the network thinks that it has scanned or the particular image it thinks is being viewed. All the rest of the neurons are hidden from view. But a neural network is more than a bunch of neurons. Some early researchers tried to simply connect neurons in a random manner, without much success. Now, it is known that even the brains of snails are structured devices. One of the easiest ways to design a structure is to create layers of elements. It is the grouping of these neurons into layers, the connections between these layers, and the summation and transfer functions that comprises a functioning neural network. The general terms used to describe these characteristics are common to all networks.

Characteristics of ANN:

Conventionally, a computer operates through sequential linear processing technologies. They apply formulas, decision rules, and algorithms instructed by users to produce outputs from the inputs. Conventional computers are good at numerical computation. But ANNs improve their own rules; the more decisions they make, the better the decisions may become.

There are six main characteristics of ANN technology:

1. the parallel processing ability
2. the distributed memory
3. the fault tolerance ability
4. the collective solution
5. The learning ability.
6. the network structures

Working of ANN:

The other parts of the —art of using neural networks revolve around the myriad of ways these individual neurons can be clustered together. This clustering occurs in the human mind in such a way that information can be processed in a dynamic, interactive, and self-organizing way. Biologically, neural networks are constructed in a three-dimensional world from microscopic components. These neurons seem capable of nearly unrestricted interconnections. That is not true of any proposed, or existing, man-made network. Integrated circuits, using current technology, are two-dimensional devices with a limited number of layers for interconnection. This physical reality restrains the types, and scope, of artificial neural networks that can be implemented in silicon. Currently, neural networks are the simple clustering of the primitive artificial neurons. This clustering occurs by creating layers which are then connected to one another. How these layers connect is the other part of the "art" of

engineering networks to resolve real world problems.

Advantages of ANN:

1. **Adaptive learning**: An ability to learn how to do tasks based on the data given for training or initial experience.

2. **Self-Organisation**: An ANN can create its own organisation or representation of the information it receives during learning time.

3. **Real Time Operation**: ANN computations may be carried out in parallel, and special hardware devices are being designed and manufactured which take advantage of this capability.

4. **Fault Tolerance via Redundant Information Coding**: Partial destruction of a network leads to the corresponding degradation of performance. However, some network capabilities may be retained even with major network damage

5. Pattern recognition is a powerful technique for harnessing the information in the data and generalizing about it. Neural nets learn to recognize the patterns which exist in the data set.

6. The system is developed through learning rather than programming.. Neural nets teach themselves the patterns in the data freeing the analyst for more interesting work.

8. Neural networks are flexible in a changing environment. Although neural networks may take some time to learn a sudden drastic change they are excellent at adapting to constantly changing information.

9. Neural networks can build informative models whenever conventional approaches fail. Because neural networks can handle very complex interactions they can easily model data which is too difficult to model with traditional approaches such as inferential statistics or programming logic.

10. Performance of neural networks is at least as good as classical statistical modelling, and better on most problems. The neural networks build models that are more reflective of the structure of the data in significantly less time.

Application of ANN:

The various real time application of Artificial Neural Network are as follows:

1. Function approximation, or regression analysis, including time series prediction and modelling.

2. Call control- answer an incoming call (speaker-ON) with a wave of the hand while driving.

3. Classification, including pattern and sequence recognition, novelty detection and sequential decision making.

4. Skip tracks or control volume on your media player using simple hand motions- lean back, and with no need to shift to the device- control what you watch/ listen to.

5. Data processing, including filtering, clustering, blind signal separation and compression.

6. Scroll Web Pages, or within an eBook with simple left and right hand gestures, this is ideal when touching the device is a barrier such as wet hands are wet, with gloves, dirty etc.

7. Application areas of ANNs include system identification and control (vehicle control, process control), game-playing and decision making (backgammon, chess, racing), pattern recognition (radar systems, face identification, object recognition, etc.), sequence recognition (gesture, speech, handwritten text recognition), medical diagnosis, financial applications, data mining (or knowledge discovery in databases, "KDD").

8. Another interesting use case is when using the Smartphone as a media hub, a user can dock the device to the TV and watch content from the device- while controlling the content in a touch-free manner from afar.

9. If your hands are dirty or a person hates smudges, touch-free controls are a benefit.

Limitations of artificial neural networks:

Artificial neural network is undoubtedly a powerful tool for decision making. But there are several weaknesses in its use.

(1) ANN is not a general-purpose problem solver. It is good at complex numerical computation for the purposes of solving system of linear or non-linear equations, organizing data into equivalent classes, and adapting the solution model to environmental changes. However, it is not good at such mundane tasks as calculating payroll, balancing checks, and generating invoices. Neither is it good at logical inference – a job suited for expert systems. Therefore, users must know when a problem could be solved with an ANN.

(2) There is no structured methodology available for choosing, developing, training, and verifying an ANN. The solution quality of an ANN is known to be affected by the number of layers, the number of neurons at each layer, the transfer function of each neuron, and the size of the training set. One would think that the more data in the training set, the better the accuracy of the output. But, this is not so. While too small a training set will prohibit the network from developing generalized patterns of the inputs, too large a one will break down the generalized patterns and make the network sensitive to input noise. In any case, the selection of these parameters is more of an art than a science. Users of ANNs must conduct experiments (or sensitivity analyses) to identify the best possible configuration of the network. This calls for easy-to-use and easy-to modify ANN development tools that are gradually appearing on the market.

(3) There is no single standardized paradigm for ANN development. Because of its interdisciplinary nature, there have been duplicating efforts spent on ANN research. For example, the Back propagation learning algorithm was independently developed by three groups of researchers in different times: Werbos, Parker 1191, and Rumelhart, Hinton, and Williams. To resolve this problem, the ANN community should establish a repository of available paradigms to facilitate knowledge transfer between researchers. Moreover, to make an ANN work, it must be tailored specifically to the problem it is intended to solve. To do so, users of ANN must select a particular paradigm as the starting prototype. However, there are many possible paradigms. Without a proper training, users may easily get lost in this. Fortunately, most of the ANN development tools commercially available today provide scores of sample paradigms that work on various classes of problems. A user may follow the advice and tailor it to his or her own needs.

(4) The output quality of an ANN may be unpredictable regardless of how well it was designed and implemented. This may not be the case for finding the solution to a problem with linear constraints in which the solution, if found, is guaranteed to be the global optimum. However, many problems have a non-linear region of feasible solutions. A solution to a non-linear problem reached by the ANN may not be the global optimum. Moreover, there is no way to verify that an ANN is correct unless every possible input is tried: such exhaustive testing is impractical, if not impossible. In a mission-critical application, one should develop ANN solutions in parallel with the conventional ones for direct comparison. Both types of systems should be run for a period of time, long enough to make sure that the ANN systems are error-free before they are used in real situations.

(5) Most ANN systems are not able to explain how they solve problems. The current ANN implementations are based primarily on random collectivity between processing elements (the individual "neurons"). As a result, the user may be able to verify a network's output but not to trace a system's flow of control. Recently, S.I.Gallant [6] demonstrated that an explanation ability can be incorporated into an ANN. Further development of this is bound to attract more prospective users into the ANN bandwagon.

Pradeep,
Second Year.

BRING YOUR OWN DEVICES

Bring your own devices(byod) also called bring your own technology(byot),bring your own phone(byop), and bring your own pc(byopc) refers to the policy of permitting employees to bring personally owned devices(laptop, tablets and smart phones) to their workplace, and to use those devices to access privileged company information and applications. The phenomenon is commonly referred as IT consumerisation.

Research is divided on benefits, but with around 95% of employee's state that they use at least one personal device for work. Byod is a reality that company it security managers simply cannot ignore.

HISTORY:

The term byod first entered common use in 2009, courtesy of Intel when it recognized an increasing tendency among its employees to bring their own devices. In 2012, the USA equal employment opportunity commission adopted a byod policy. Now nearly 75% of Brazil and Russia adopt byod policy.

ADVANTAGES:

Some reports have indicated productivity gains by employees adopting byod policy.

It helps employer concern to invest more in other sectors instead of buying devices for employees.

Others say it increases employee morale and convenience which makes him to look like flexible and attractive employer.

It can also help employee to even carry works at home.

DISADVANTAGES:

It also involves various risks.

To ensure information doesn't end up in wrong hands, the company has to put security measures in place.

Byod may lead to data breaches.

S.A.Abishek,
Second Year.

STRATI, THE FIRST 3D-PRINTED ELECTRIC CAR.

When Jay Rogers drove away from the International Manufacturing Technology Show in September and toured around Chicago in a two-seater, you could be forgiven for not paying much attention. Unless, of course, you'd watched it rise up out of a 3D printer the size of a shipping container over the past 44 hours. Meet the world's first 3D-printed electric car.

This model, called the Strati, is the result of a four-and-a-half month process, from design to finish, but according to Rogers, the CEO of Local Motors, the company behind the Strati, the timescale for future models could be cut to as little as six weeks, and the printing itself to just 24 hours. That's a pretty quick turnaround.

The Strati only has 49 parts, compared with 25,000 in an average car.

The key is simplification. On average, a car contains thousands of parts; the Strati contains just 49. This seems incredible, but as Rogers explains: "If you can make a vehicle out of one material, you can massively reduce the number of parts." Certain components, such as the engine, tyres and suspension, cannot be printed, but the majority of the car, from the chassis to the seats, was created using a carbon-fiber reinforced thermoplastic, which Rogers says has the same strength as mid-grade aluminium. His team are currently refining the process further so they can print "different flexibilities, durometers, or compressibility of this material" in different regions of the car. This would allow them to make softer plastics for the seats, for example, or compression bars that would increase the safety of the vehicle.

Rogers claims the Strati will be on the road within the next 12 months. He's previously stated that the car would cost between $18,000 (£11,500) and $30,000, but says the price will drop. Eventually he wants to see localized factories producing cars designed with their environment in mind. For example, a small factory in Alaska could manufacture Straits designed specifically for cold weather, while another in Utah could produce cars suited for the desert. Rogers hopes that this principle could be applied to other industries in the US as well, helping to bring manufacturing back from overseas.

Anitha,
Second Year.

EMERGING TECHNOLOGIES

CHARGING THE CELLPHONE IN ONE MINUTE.

A new inexpensive aluminium battery that could charge cellphones in just one minute has been developed by Stanford scientists.

The new aluminium battery is much safer than existing lithium-ion and alkaline batteries in wide use today and does not catch fire, researchers said.

"We have developed a rechargeable aluminium battery that may replace existing storage devices, such as alkaline batteries, which are bad for the environment, and lithium-ion batteries, which occasionally burst into flames," said Hongjie Dai, a professor of chemistry at Stanford University.

"Our new battery won't catch fire, even if you drill through it," said Dai.

Aluminium has long been an attractive material for batteries, mainly because of its low cost, low flammability and high-charge storage capacity, researchers said.

An aluminium-ion battery consists of two electrodes: a negatively charged anode made of aluminium and a positively charged cathode.

"People have tried different kinds of materials for the cathode," Dai said.

"We accidentally discovered that a simple solution is to use graphite, which is basically carbon. In our study, we identified a few types of graphite material that give us very good performance," said Dai.

The team placed the aluminium anode and graphite cathode, along with an ionic liquid electrolyte, inside a flexible polymer-coatedpouch.

"The electrolyte is basically a salt that's liquid at room temperature, so it's very safe," said Stanford graduate student Ming Gong, co-lead author of the study.

Aluminium batteries are safer than conventional lithium-ion batteries used in millions of laptops and cell phones today.

Smartphone owners know that it can take hours to charge a lithium-ion battery. But the team reported "unprecedented charging times" of down to one minute with the aluminium prototype.

"This was the first time an ultra-fast aluminium-ion battery was constructed with stability over thousands of cycles," researchers said.

"Another feature of the aluminium battery is flexibility. You can bend it and fold it, so it has the potential for use in flexible electronic devices. Aluminium is also a cheaper metal than lithium," Gong said.

Kiruthiga,
Second Year.

ANDROID IN 2020: THE FUTURE OF GOOGLE'S MOBILE OS EXPLORED

Cast your mind back to late 2008, when the first Android-powered handset saw the light of day. Obama won his first Presidential election, Apple launched its App Store (the iPhone had appeared the year before), Google announced its own Chrome browser and we got our first look at the company's new mobile OS on the T-Mobile G1.The Android of 2013 is a world away from that 2008 version, where the Android Market was in its infancy, there were no native video playback capabilities and the G1 had no multi-touch support. But Google is going to have to keep innovating and improving its mobile OS to keep the lion's share of the smartphone market. We've taken a peek into the future to consider what Android might look like in the year 2020. With new Android monikers now appearing about once a year, its codename should start with an "R" - Rhubarb Pie, Rocky Road or Rice Pudding, perhaps? Or maybe even Roles, given the tie-up deals Google is putting in place these days?

Here are the four key features we think could play the biggest part in Android's ongoing evolution over the next seven years:

1. Maps in Android in 2020

Apple's Maps app may not have set the world alight when it launched, but its here now (alongside Nokia's offering), and that

means Google needs to up its game to stay ahead. The 2013 Google Maps refresh brought with it a greater level of customization based on your personal searches, and this will only increase in the future.

As for all of the services hanging off Maps, Google is already hiring out the Street View cameras and enabling you to peek inside buildings - you can expect Android 2020 to offer better imagery of most public buildings, as well as tappable info as you move around.

There might even be an option to enable Google to anonymously augment its Street View data with the snaps you take on your phone to provide an even more up-to-date view of the world.

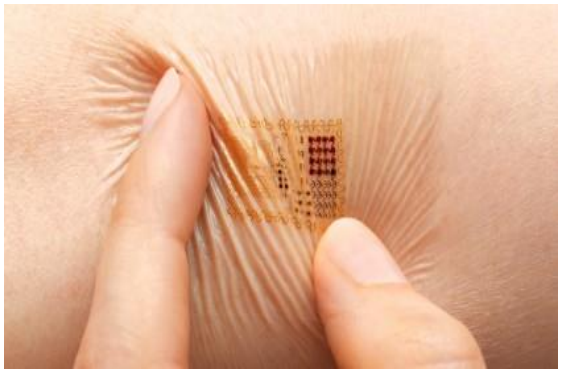
2. Android messaging in 2020

Google has already made its intentions clear with the Hangouts upgrade we got at I/O this year. With Facebook, WhatsApp, Face Time, Snapchat, Skype et al to battle against, there's no doubt we'll see Google push further into the universal messaging game, covering SMS, email, instant messaging and video calling with tools that are baked into Android.You won't have to have separate apps for each of these, as the UI will be unified in a way that makes it easy to seamlessly slip between each method of calling. We might even get Google Voice in the UK by the time 2020 rolls around, though don't hold your breath.

How far Google can go depends on the networks and its competitors in the field - it's already launched an ultra-fast internet service in the US, so telecoms could be next. And the company has been sniffing around unused wireless spectrum frequencies, too. Don’t be surprised to see free 5G video calling and texting between Android devices by 2020, with all of your conversations grouped by person rather than platform, and archived and searchable in Gmail. Eric Schmidt has already predicted that every human will be online by 2020 (no doubt hoping that we'll all have a Google+ page too), and the more people his company can help get connected the better for Google's bottom line.

3. Android payments and security in 2020

The Google Authenticator app of 2020 could work with your device's NFC chip to automatically log you into Gmail when you sit down at your laptop, for example, or pay for your flight when you step on a plane. Apple has Passbook, and Google will want an equivalent in place too.



We've seen tattoos and pills shown off as possible authentication triggers of the future, and Android 2020 will play a big part in proving you are who you say you are, whether it's at a coffee shop or Google I/O.Basic face recognition is already available, but in the years to come it has the potential to get much more accurate. It might even be joined by fingerprint or retina scanning built into Android's camera app, or at least part of the phone, now that Apple has shown that fingerprint scanning is a viable option with its new Touch ID technology.

4. Android hardware in 2020

Hardware innovations are going to play a big part in Android's roadmap. Besides the obvious smaller, thinner, faster improvements for our phones, bendable screens should be in place in the near future - the likes of Samsung have the tech already in production, and Android will change to adapt itself through scrolling rivers of news, status updates and other notifications. Ever-changing, ever-optimizing displays will be the order of the day, and the batteries and mobile processors of 2020 should be able to keep up.

Google Glass has of course generated plenty of buzz this year, good and bad, as has the rumor of an Apple iWatch to compete with the Galaxy Gear. It looks like the wearable tech revolution is about to take off, and by the time 2020 rolls around this could mean miniature devices on our glasses, wrists and clothing, ready to capture every moment and record every movement.

You won't need to take photos any more, since Google will simply pick out the best pictures from the unedited stream of the day's events. Nor will you need to decide what to eat for dinner - Android 2020 will know what you've been doing today (and what you're probably doing tonight), and can pick out the most suitable foods for you.

Android: the 2020 edition

The only certainty about Android's future is that it has a fight on its hands to stay competitive. Apple's new-look iOS 7 has given Google plenty to think about, not least with its tie-ins with Facebook, Twitter, Bing, Flickr and Vimeo.

Android's continuing integration with Chrome and the desktop/laptop will make for

an interesting story too - they're both run by the same man, Sundar Pichai, remember - and perhaps Google's biggest challenge will be to convince us that we can trust it with more and more information about where we are, who we communicate with and the way we live our lives.

Deepika.M,
Second Year.

DATA MINING

Data Mining is an analytic process designed to explore **data** in search of consistent patterns or systematic relationships between variables, and then to validate the findings by applying the detected patterns to new subsets of data.

> **Data mining** is the process of analyzing data from different perspectives and summarizing it into useful information.

A **data warehouse** can be used to analyze a particular subject area.

**** In general, data mining is also referred to as "BIG DATA". ****

What are the top changes within Big Data in 2015?

1. Data Agility Emerges as a Top Focus - Agility refers the ability to be quick.

2. Organizations Move from Data Lakes to Processing Data Platforms - 2014 was the year of the data lake, an object-based storage repository that stores raw data in its native format and now Data platforms is used to integrating and managing large sets of structured and unstructured data from disparate sources

3. Enterprise Architects Separate the Big Hype from Big Data

4. Self-Service Big Data Goes Mainstream
"Self-service empowers developers, data scientists and data analysts to conduct data exploration directly."

Priya Varshini,
Second year.

STUDENT'S CORNER

INTERVIEW PREPARATION & BASIC TIPS

People often say "**you never get a second chance to make a first impression**", and that's actually quite true—which is why it's so important to start on the right foot.

So, knowing that, how do you make the best first impression possible?

Everyone's different, and while you don't want to be too formulaic, there are definitely a few things you'll want to keep in mind that should universally help show you in a positive light while preparing for a job or employment interview. Small things make a huge difference and we have listed tips to make the first impression the best and make the interview a successful one.

1. Your interview starts the moment you walk into the building; anyone you meet may be connected with the hiring manager or the hiring team.

2. Be nice to everyone you meet from the receptionist up to the senior-level executives; everyone's opinion counts.

3. If interviewing with several people at the same time, give everyone equal attention; you never know who the real decision maker is.

4. Answer interview questions by communicating strong stories of success; prove what makes you unique rather than just explaining what you did.

5. Try to ask questions throughout the interview; it should be a conversation not an interrogation.

6. Asking questions during the interview helps you uncover key issues and better prepares you to answer questions throughout the interview.

7. Be sure to ask what the next steps in the interview process are so you can prepare an appropriate follow-up strategy.

8. Create a brief and visually interesting presentation about your skills and achievements to give to the hiring manager during the interview.

9. When asked questions about mistakes you have made, be authentic, explain what you learned from the experience, and don't get defensive.

10. If asked about your weaknesses, don't spin weaknesses into strengths; it's not credible and who wants to hire someone they don't trust?

11. Ask big-picture questions about the company and how the department you are interviewing with fits into the company's long-term goals.

12. People think they should talk in general terms about career successes, but you build trust with interviewers by talking about specifics.

13. If recruiters ask you to "walk them through your background," focus on your core message of value, not the five positions you held pre-2001.

14. Interviewees are a risk to hiring managers because they don't know you. Prove success that can be duplicated in their company to earn trust.

15. A good interviewee is also a good listener. The questions asked provide clues to what the hiring manager needs and expects.

16. For women, avoid heavy perfume, makeup, and jewelry on interviews. For men, go for a clean-shaven look, short hair, and polished shoes.

17. For men and women, cover up any tattoos and remove body piercing before interviews (other than earrings for women).

18. Before the interview, turn off your cell phone, take loose change out of your pocket, and don't show up with your own coffee from Starbucks.

20. Be memorable for what you say during an interview, not for what you wear.

21. On phone interviews, sit in front of a mirror to make you feel like you are in front of someone-- even if that someone is yourself.

22. During a phone interview, the only tool you have to communicate enthusiasm is your voice; vary your tone to communicate fit and interest.

23. Phone interviews are like open-book tests; keep any necessary notes handy so you can refer to them during the call.

24. While waiting for your interview, check out the surroundings. Do people look frazzled or happy? These are clues into the department culture.

25. Try to relax - don’t sit on the edge of your chair and don't lean too far back: sit up reasonably straight and still.

P.Kamalesh Jain,
Second year.

BULLETINS

JAVA TRAINING PROGRAM

Ten days JAVA program was conducted to **third years** for enhancing the programming skills in JAVA by **Mr.Rajendran** from **08.06.15** to **19.06.15.**

DIGITAL INDIA WEEK

Dr.N.Balaji,HOD of **IT Department** gave lecture to **second year & final year students of IT Department** about the **DIGITAL INDIA** on **07.07.15.**

STUDENT'S ACHEIVEMENTS

Students of final year namely **R.Priyadarshini & Swetha Sermakkani** developed a mini project for the department library and it is running successfully.

Suggestions and Feedback Contact:
klnceitsig@gmail.com