SESHADRIPURAM EDUCATIONAL TRUST

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SCIENCE WORLD

Newsletter from the Faculty of Science

Private Circulation Only

June- 2016

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Chief Editor's Note

I am extremely happy that the June 2016 issue of Science World is ready for release. The Department of Computer Science and the BCA course which they offer have done well in the last year, in terms of increase in intake, the activities conducted, the results and the placements. In a college largely dominated by the Commerce stream, the BCA course and students are carving out a distinct identity which is to be appreciated and nurtured. One important element of this identity is giving students the platform and the encouragement to go beyond the university curriculum and explore new developments in their chosen field of study. I am impressed by the range of subjects -from 3D printing to 5G wireless technology, from advanced video games to solar cars – covered in the current issue of the newsletter.

I congratulate Prof Shashidhar T and other members of the Editorial Board on their excellent effort. I am also happy that this issue, like the previous one, is being brought out largely as an e-journal hosted on the college website. I am confident that Science World will continue to grow with sustained excellence in the coming years.

Dr.Anuradha Roy

Principal

ABOUT US

The BCA Course commenced in our college the year 2013 with a sanctioned intake of 30 students per batch. In 3 years, it has grown to two sections per batch with a sanctioned intake of 120 students. The Department of Computer Science is fully equipped with latest systems and Wi-Fi enabled labs. We have an active placement cell which has placed 1/3rd of the first outgoing batch in reputed companies like Wipro, Infosys, and TCS etc. The Department also offers various advanced add-on courses which equip students to face current industry requirements.

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A Report on Inter College IT Fest "INCOGNITO - 2016"



Incognito 2016, the first Intercollege IT Fest organized by the Department of Computer Science, Seshadripuram College, was held on 24th Feb 2016. The initiative was directed at encouraging BCA and Computer Science students from across Bangalore to come together to exhibit their creativity , intelligence and knowledge application**.** 170 students from 40 colleges participated in a wide range of innovative competitions ranging from IT Quiz to Talent Show.Incognito 2016 was delighted to have Mr Shivakumar H N, CEO, and ITBTNT Business Solutions, as the Chief Guest at the inauguration. In his inaugural address, Mr Shiva Kumar motivated the gathering by his stirring words on the challenges of a rapidly developing technical field and how to address these challenges. He also enlightened us with interesting information about the recently developing area of Cognitive Networking.

The Inauguration programme was presided over by Sri Parthasarathy.B.M, Hon. Treasurer, Seshadripuram Educational Trust. The high point of the inaugural programme was the release of the brilliant fest video which had been produced by the BCA students. The inauguration was followed by a packed day of competitions with Presidency College winning the overall Championship.

Report on Add-on Certificate Courses

The Department of Computer Science successfully conducted Add-on Certificate Courses in "Advanced Web Technology" and "Microsoft .NET" in collaboration with Sri Pradhyumna Technologies Pvt Ltd. This was part of the initiative taken by Prof.Shashidhar T, HOD, Computer Science to equip students with the latest trends in the industry and also to bridge the gap between industry and academia, thus enhancing the employability of students in the current challenging world. A comprehensive 30 hour course for each skill was tailored and delivered, focusing upon implementing skills using real life case studies. The training was well received by the students. Certificates were distributed at a valedictory function.





Fontus – Self Filling Water Bottle



Fontus device converts humidity in the air into drinkable water.A designer in Vienna, KristofRetezárinventedFontus, and A handy gadget which can be attached to a bicycle so that cyclists can generate water during long-distance rides. Fontus works based on the principle of condensation. It is similar like taking something out of a refrigerator and leaving it for a while so that the moisture is gathered on the sides of the object.

This solar-powered device consists of a condensator (like a cooler) that is connected to a series of hydrophobic surfaces that repel water. As the bicycle mounted gadget takes in air, and these surfaces get cold, the water is left behind. It includes a filter at the top to keep dust and bugs out of the water, but not a way yet to keep potentially harmful contaminants. The filled water is clean where the air is not contaminated like nature. Still Retezár is planning to make bottle containing carbon filter, which can be used well even in city areas. He is also working on a stand-alone version that uses an invented ventilator to suck air into the system.

According to UN statistics, more than 2 billion people in more than 40 countries live in regions with water scarcity. In year 2030, 47% of the World's population will be living in areas with high water stress. The Earth's atmosphere contains around 13,000 km^3 of mostly unexploited freshwater. This project is an attempt to discover these resources. Fontus can produce 0.5 litres of water in 1 hour with temperature 86^0 to $104^0$and 80% to 90% humidity. Retezár said he is aiming to keep the retail price for the Fontus under $100.

Dhruva Kumar V
4thSem BCA

25 Interesting Facts about Computer Viruses You Really Should Know

- The very first computer virus was the Creeper Virus that was detected on ARPANET, the forerunner of the Internet, in the early 1970s. It was an experimental self-replicating program written by Bob Thomas at BBN Technologies in 1971.
- Currently, there are three basic categories of malicious software threats: viruses, worms, and Trojan horses. While the behaviour of them differs, they are all built from the same basic instructions and computer logic.
- The typical malicious software author is male between fourteen and twenty-five years of age. Only a few female virus writers have been known so far.
- About 70% of virus writers work under a contract for an organized crime syndicate.
- Melissa virus (March 1999) was so powerful that it forced Microsoft and many other large companies to turn off their e-mail systems until the virus could be removed completely.

Contd., in page # 11

3D PRINTING

ABSTRACT

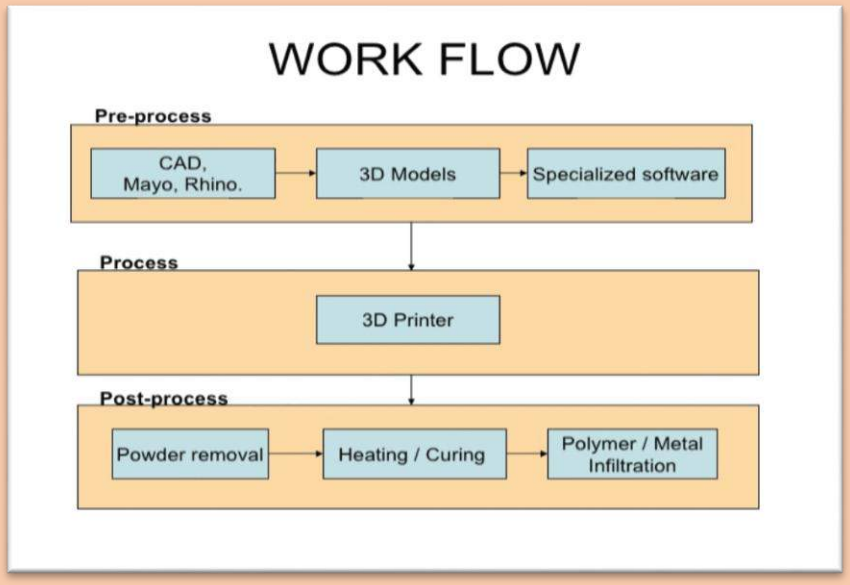
As 2D printing is just on paper, there is need for 3d printing as the model which you have designed can be felt.

WHAT IS 3D PRINTING?

3D printing, also known as additive manufacturing is a process of making three dimensional solid objects from a digital file. To create an object in 3D printing, successive layers of material are formed which are controlled by computer.

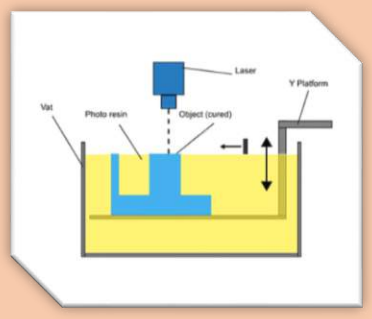
HOW DOES 3D PRINTER WORK?

- It all starts with making a virtual design of the object you want to create.
- 3D printing models may be created with a computer aided design(CAD) package, through a 3D scanner or by a plain digital camera and photogrammetric(is the science of making measurements from photograph) software.
- 3D scanners use different technologies to generate a 3D model like time-of-flight, modulated light, volumetric scanning.
- To prepare a digital file for printing, the 3D modeling software "slices" the final model into hundreds or thousands of horizontal layers. When the sliced file is uploaded in a 3D printer, the object can be created layer by layer. The 3D printer reads every slice (or 2D image) and creates the object, blending each layer with hardly any visible sign of the layers, with as a result the three dimensional object.

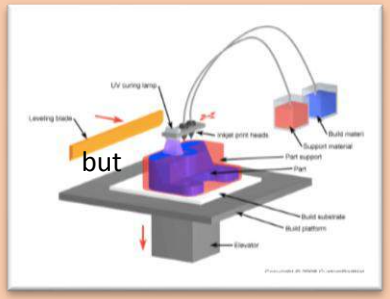


- Since 2010, the American Society for Testing and Materials (ASTM) group "ASTM F42 – Additive Manufacturing" developed a set of standards that classify the Additive Manufacturing processes into 7 categories according to Standard Terminology for Additive Manufacturing Technologies. These seven processes are:

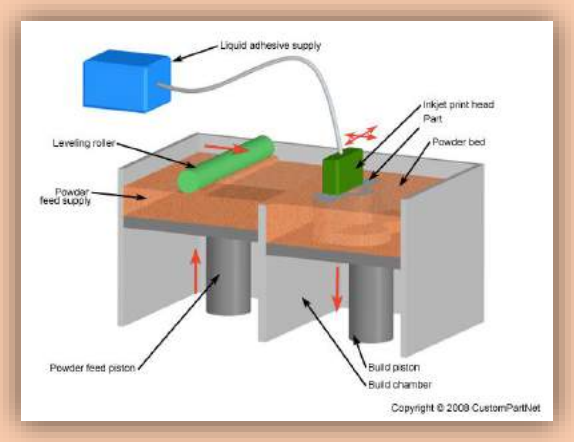
A. **Vat Photopolymerisation:**A 3D printer based on the Vat Photopolymerisation method has a container filled with



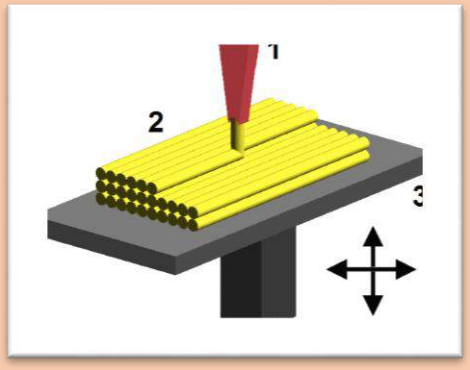
photopolymer resin which is then hardened with UV light source.



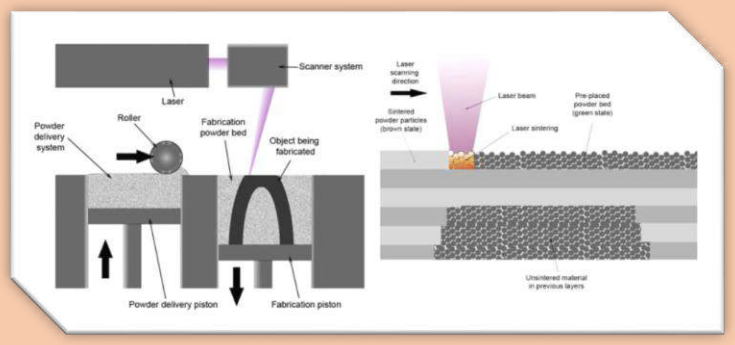
B. Material Jetting: In this process, material is applied in droplets through a small diameter nozzle, similar to the way a common inkjet paper printer works, but it is applied layer-by-layer to a build platform making a 3D object and then hardened by UV light.



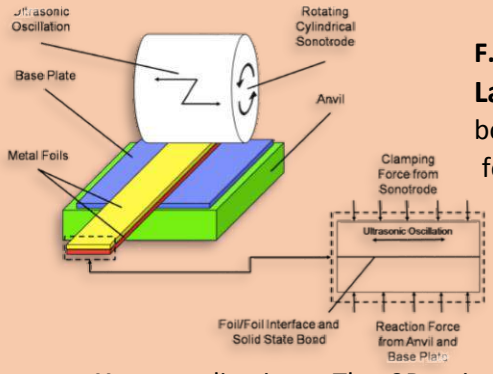
C. Binder Jetting: With binder jetting two materials are used: powder base material and a liquid binder. In the build chamber, powder is spread in equal layers and binder is applied through jet nozzles that "glue" the powder particles in the shape of a programmed 3D object. The finished object is "glued together" by binder remains in the container with the powder base material.



D. Material Extrusion: The most commonly used technology in this process is Fused deposition modeling (FDM). The FDM technology works using a plastic filament or metal wire which is unwound from a coil and supplying material to an extrusion nozzle which can turn the flow on and off.



E. Powder Bed Fusion: The most commonly used technology in this processes is Selective laser sintering (SLS). This technology uses a high power laser to fuse small particles of plastic, metal, ceramic or glass powders into a mass that has the desired three dimensional shape.

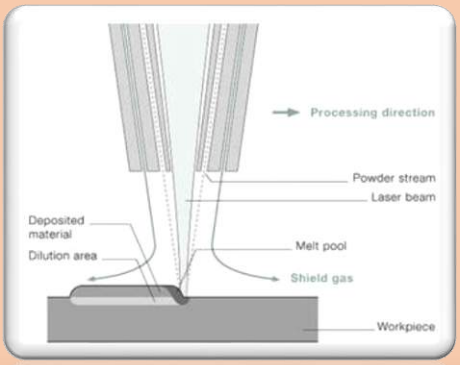


F. Sheet Lamination: Sheet lamination involves material in sheets which is bound together with external force. Sheets can be metal, paper or a form of polymer. Metal sheets are welded together by ultrasonic welding in layers and then CNC milled into a proper shape.

G. Directed Energy Deposition: This process is mostly used in the high-tech metal industry and in rapid manufacturing

H. applications. The 3D printing apparatus is usually attached to a multi-axis robotic arm and consists of a nozzle that deposits metal powder or wire on a surface and an energy source (laser, electron beam or plasma arc) that melts it, forming a solid object.

APPLICATIONS OF 3D PRINTING



Applications include rapid prototyping, architectural scale models &maquettes, healthcare (3d printed prosthetics and printing with human tissue) and entertainment (e.g. film props).

Other examples of 3D printing would include reconstructing fossils in paleontology, replicating ancient artifacts in archaeology, reconstructing bones and body parts in forensic pathology and reconstructing heavily damaged evidence acquired from crime scene investigations.



CONCLUSION

It is predicted by some additive manufacturing advocates that this technological development will change the nature of commerce, because end users will be able to do much of their own manufacturing rather than engaging in trade to buy products from other people and corporations.

3D printers capable of outputting in color and multiple materials already exist and will continue to improve to a point where functional products will be able to be output. With effects on energy use, waste reduction, customization, product availability, medicine, art, construction and sciences, 3D printing will change the manufacturing world as we know it.

Preethi R
4thSem BCA

BrainOS: Enabling Everyday Robots

What is BrainOS?

BrainOS is a software framework for robotics developed by Brain Corporation. It includes

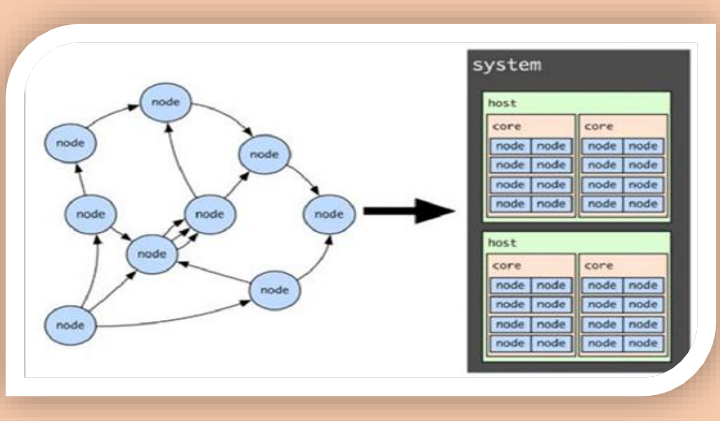
BrainOS Core-an efficient message passing system,and BrainOS Library-a collection of algorithms selected for robotics. BrainOS Apps enable robots to perceive,control themselves,and even learn from their users or from the world around them.

BrainOS targets the Commercialization of everyday robots. It employs both open source and closed source,proprietary components with the goal of making systems that employ the best available technology.

Why BrainOS is called an OS?

BrainOS is an operating system in the same sense that Google's Android or Apple's iOS, BrainOS runs on the top of UNIX Kernel. Its applications are not desktop apps, but rather robot behaviours. In future releases, BrainOS may run on other kernels, including Microsoft Windows10.

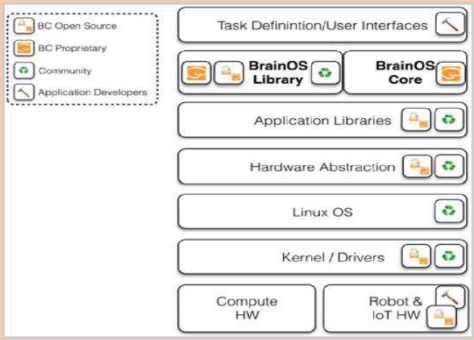
How BrainOS applications work?



BrainOS applications consist of software nodes interconnected through the BrainOS message passing framework. Nodes can be loosely organised into categories depending on their capabilities and how they are used.

General categories if nodes include: Feature extractors, predictors, controllers, combiners and web servers.

Applications with BrainOSBrainOS applications can be understood in terms of software or hardware "Stack" as illustrated in following diagram. At the very top of BrainOS application stack, the user interface layer allows the end user to operate the robot or IOT device. The user interface could be a Smartphone, a speech recognition system or a GPS device. The next level of application stack is BrainOS, which contains both BrainOS core and BrainOS library.



- BrainOS core: is a message passing framework that is optimised for integrating machine learning algorithms with perception and control. It serves as a high level application layer between application or robot specific user interface and underlying algorithms.
- BrainOS library: consists of algorithms that can be assembled to create applications. These perform most of the computations, carrying out tasks like face recognition, object categorisation, visual tracking, machine learning, controlling of robot motors and IOT devices. These algorithms are implemented through function call to application libraries. Application libraries provides basic numerical, basic graphical and computational routines used in many application

RavirajKaranth U
4thSem BCA

Magnetic Hill

A



gravity hill, also known as a Magnetic hill, mystery hill,mystery spot or gravity road.

It produces anOptical illusion:

Magnetic Hillis a "gravity hill" located near Leh in Ladakh,India.

The layout of the area creates an optical illusion that the downhill road is actually an uphill road. Objects and cars on the hill may appear to roll "uphill" in defiance of gravity when they are, in fact, rolling downhill.



A **gravity hill** (also known as a **gravity road**) is a place where the layout of the surrounding land produces the optical illusion that a very slight downhill slope is in fact an uphill slope. Thus, a car left out of gear will appear to be rolling uphill.

Above is a signboard of what has famously come to be known as the 'Magnetic Hill' in Ladakh. It invites you to be a part of and experience this mystifying phenomenon first hand.

Well the car and objects on the hill may appear to roll "uphill", What about Helicopters and Aircrafts???

- Impact on Helicopters and Aircrafts

Not only are the vehicles travelling on the road attracted by the magnetic powers of this hill, even the helicopters and aircrafts feel the same magnetic impact. Locals and the Indo-Tibetan Border Police (ITBP) personnel claim that the helicopters and aircrafts that pass through the area have to fly at a greater speed to avoid the magnetic impact of the Magnetic hill. And if the aircraft comes within the radius of Magnetic Hill, it starts to jerk. In fact, the Indian Air Force pilots always steer clear of the Magnetic Hill.

- **The Magnetic Mystery Explained**

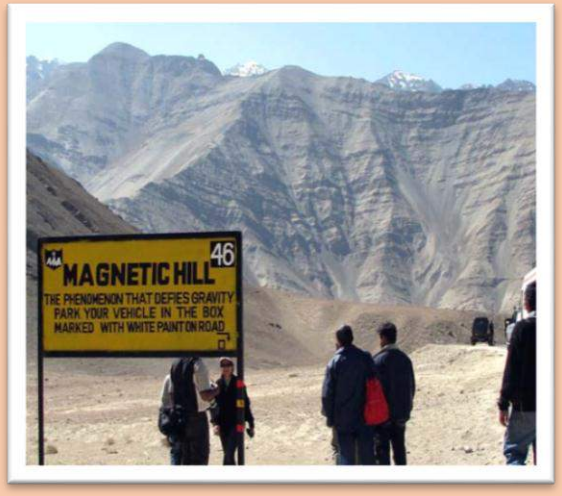


Many claim that natural or even supernatural forces are at work here causing the magnetic attractions. However, there is some scientific reasoning to this phenomenon as well.

The Magnetic Hill is a place where the layout of the surrounding land produces the optical illusion that a very slight downhill slope appears to be an uphill slope. Thus, a vehicle left out of gear will appear to be rolling uphill. The slope of hill is an optical illusion.

A completely or majorly obstructed horizon is the most important factor contributing to the illusion. As, in the absence of a horizon it becomes difficult to judge the slope of a surface. If the horizon cannot be seen or is not level, then we may be fooled by objects that we expect to be vertical but that are really not.

- **To make it simple, here is an example**



The illusion is similar to the Ames room, in which balls can also appear to roll against gravity.

Have you heard about Bicycle racing?

Many people visit this mystery spot,to experience the opposite phenomenon that appears here.

The opposite phenomenon---an uphill road that appears flat--- is known in Bicycle racing as a "False Flat".

You may also be interested in knowing the list of gravity spots around the world

- India , Australia, Brazil, Canada, China , Cyprus , Czech Republic , Dominican Republic , France, Germany, Guatemala, Indonesia, Ireland , Isle of Man, Italy , Jordan, Kenya, Lebanon , Malaysia, Mexico, Oman, Philippines, Poland, Portugal , Romania , Serbia, Saudi Arabia ,South Korea, Slovakia, Sweden, UK,US.

Aishwarya R
2nd Sem BCA 'A'

25 Interesting Facts about Computer Viruses You Really Should Know Contd.,

- Before computer networks became widespread, most viruses spread on removable media, particularly floppy disks. In the early days of the personal computer, most users regularly exchanged information and programs on floppies.
- According to the Microsoft Security Intelligence Report and Consumer Reports, 40% of US household are affected by computer viruses.
- Amazon.com was the most exploited target for phishing attacks, followed by Apple and eBay.
- Internationally, US is at the highest risk of being attacked by computer viruses, followed by Russia.
- Yet, computer virus writing is not considered an illegal act in US. Some other countries are beginning to draft computer crime laws that are far stricter than those in US. In Germany, for instance, mass exchange of computer viruses for any reason is restricted and Finland has recently made writing a computer virus an illegal act.
- With the constantly growing number of computer viruses and hackers, new types of computer crimes have been recognized. These days, the so called cybercrime encompasses a broad range of activities such as cyber terrorism, cyber extortion and cyber warfare.
- These days, over 6,000 new computer viruses are created and released every month.
- The most expensive computer virus of all time was referred to as MyDoom which caused $38 billion in damages. It was fast moving, infecting open networks and every computer with access to it. In 2004, this virus was estimated to impact 25% of all emails.
- It is actually very easy to become a member of Anonymous, the most famous international network of hacking activists. Therefore, only a handful of them are elite hackers capable of exploiting security flaws in computer systems and writing viruses.
- You cannot get a computer virus by just reading an email. It is only activated when you click a link or open an infected attachment.
- It is estimated that up to 90% of emails contain some malware.
- By 1990, there were roughly 50 known computer viruses. During the late 1990s, the number of viruses skyrocketed to more than 48,000.
- Some virus writers might actually be children who create the viruses to simply test their programming skills.Contd., in page # 18

5G Wireless Technology

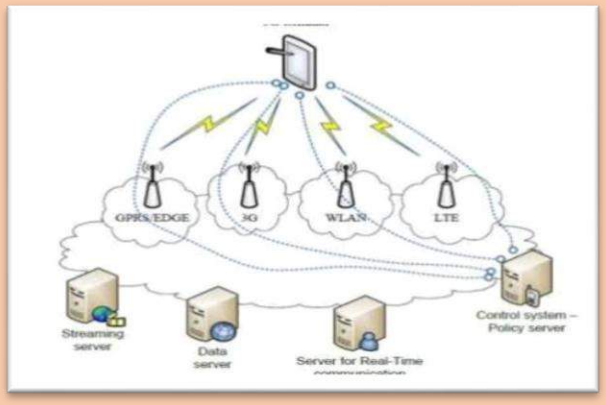


Stands for 5th generation mobile technology. Next major phase of mobile telecommunication standard. It would ideally answer the challenges that a 4th model would present. 5th technology will change the way by which users access their mobile phones. 5g wireless technology can change the way we use wireless gadgets high bandwidth.

OBJETIVES:

5g being developed to accommodate QoS rate requirements set by further development of existing 4g applications. Flexible channel bandwidth between 5 and 20MHz, optionally up to 40MHz. Data rate of at list 1 GB/s between any two points in the world. Increase system spectral efficiency of up to 3bit/s/Hz/cell in the downlink and 2.25bit/s/Hz/cell for indoor usage.

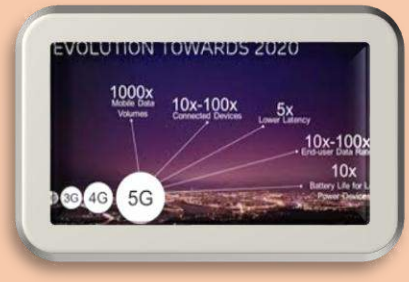
5G Technology:



Stands for 5th generation mobile technology, wearable devices with AI capabilities. One unified global standard. Ubiquitous computing: user can simultaneously be connected to several wireless access technologies, makes it more attractive and



effective. 5g technology is providing large broadcasting of data in Gigabit which supports almost 65,000 connections. It offer transporter class gateway with unparalleled consistency. Through remote management offered by 5g technology a user can get better and fast solution, it also provides up to 25Mbps connectivity speed, also support virtual private network. It uses flat IP concept to make it easier for different RAN to single Nano Core. Flat IP architecture provides a way to identify devices using symbolic names unlike the hierarchical architecture such as that used in normal IP addresses.



Above fig shows network architecture for 5g .which is all IP based model for wireless and mobile network interoperatability. System uses a terminal and number of independent access technologies. Each of the radio access technologies seen as the IP link to the outside internet world. There should be different radio interface for each radio access technology(RAT) in the mobile terminal.

Comparison of Wireless Technology:

Technology/ Features	1G	2G	3G	4G	5G
Start/deployment	1970/1984	1980/1999	1990/2002	2000/2010	2010/2015
Data bandwidth	2kbps	14.4-64 kbps	2Mbps	200Mbps-1Gbps for low mobility	1Gbps and higher
Standards	AMPS	TDMA,CDMA,GSM	WCDMA,CDMA-2000	Single unified standard	Single unified standard
Technology	Analog cellular	Digitalcellular	Broad bandwidth	IP and seamless LAN/WAN/PAN and WLAN	IP and seamless LAN/WAN/PAN WLAN and www
Multiplexing	FDMA	TDMA,CDMA	CDMA	CDMA	CDMA
Core network	PSTN	PSTN	Packet network	internet	internet
Services	Mobile telephony	Digital voice,short messaging	Integrated high quality audio, video and data	Dynamic information access, wearable devices	Dynamic information access, wearable devices with AI capabilities

Sahana S
4thSem BCA

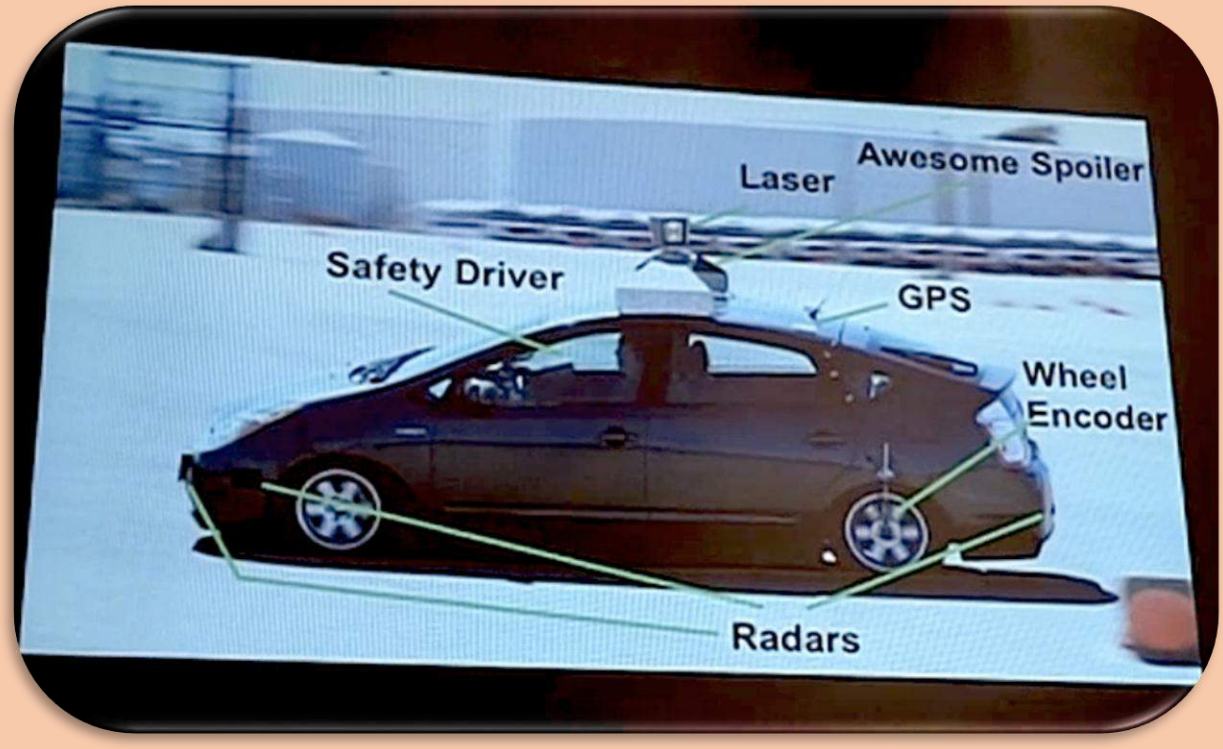
Google Self-Driving Car





Once a secret project, Google autonomous vehicle are now out in open for testing in public roads even inviting people to ride in the car for the Company's test.

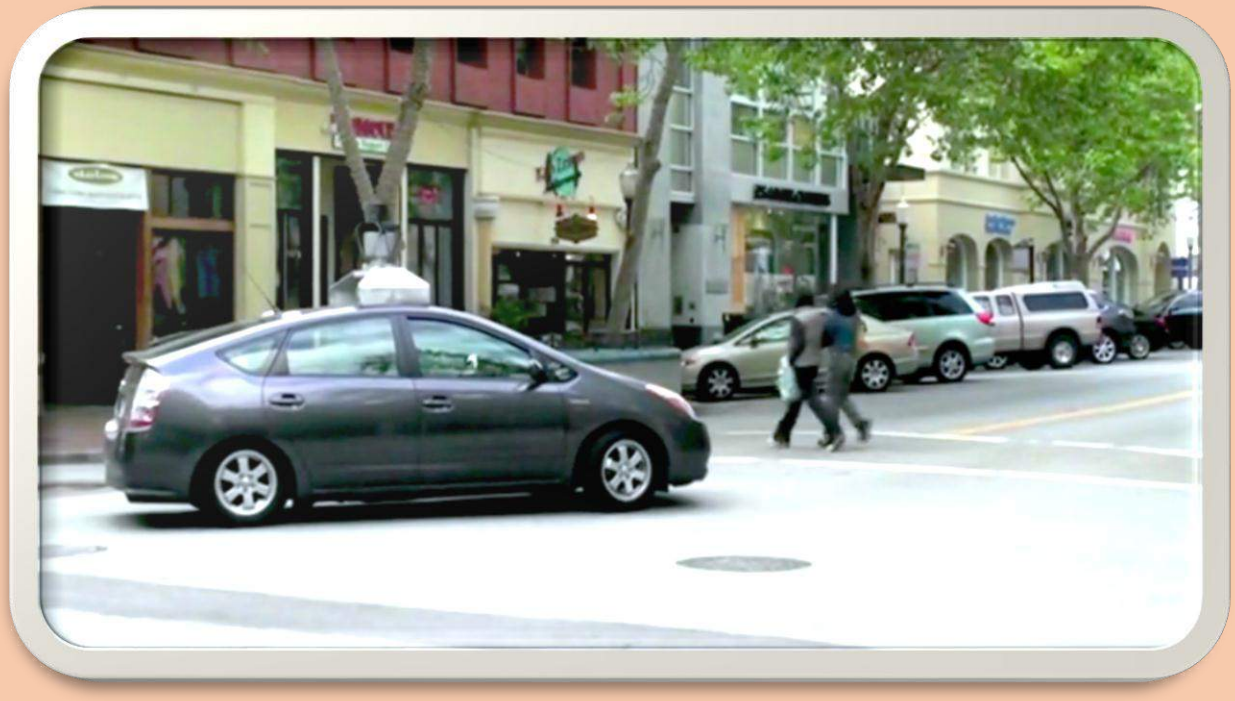
Google Toyota Priuses has now logged into more than 3, 00,000 km driving in city traffic, busy highways, tours and much more. This project is still far from commercial viability, but Google has



setup demonstration in its Campus to test and improve these cars including the safety.

Urmson, the tech lead for the project, said that the "heart of our system" is a laser range finder mounted on theroof of the car.The device, a Velodyne 64-beam laser, generates a detailed 3D map of the environment. The Car thencombines the laser measurements with high-resolution maps of the world, producing different types of data models thatallow it to drive itself while avoiding obstacles and following the traffic rules.

The vehicle also carries other sensors like four radars, mounted on the front and rear bumpers, that allow the Car to see far enough to be smart in dealing traffic and to catch the shortest way for the destination. A Camera, positioned near the rear-view mirror detects traffic lights. GPS is used as a measurement unit. Wheel encoder determines the vehicle's location and keeps track of its movements. The image below shows how the Car stopped following the traffic signal for the pedestrians to walk on the road.



These vehicles would become a shared resource, a service that people would use when needed. You'd just tap on your Smartphone, and an autonomous car would show up where you are ready to drive you anywhere. You'd just sit and relax or do work.

Disadvantages:

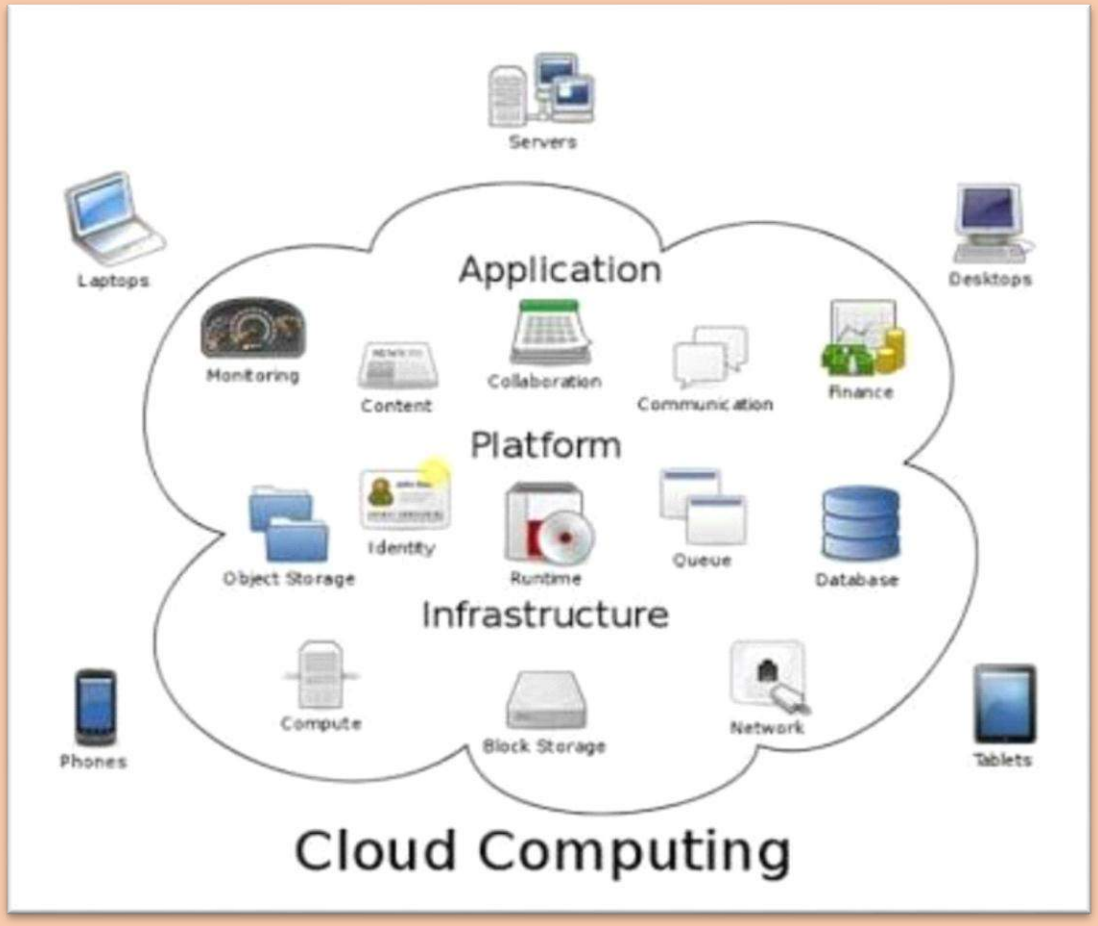
1. This project takes a few years to accomplish.
2. Eventually, these Cars would cost more than expected.
3. It changes the way of driving completely.
4. As these Cars use Robotics technology, it might be danger to human kind.

Dhruva Kumar V
4thSem BCA

CLOUD COMPUTING

Cloud computing is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on demand.Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data.

Cloud computing has become a highly demanded service due to the advantages of high computing power,cheap cost of services,high performance,accessibility as well as availability.



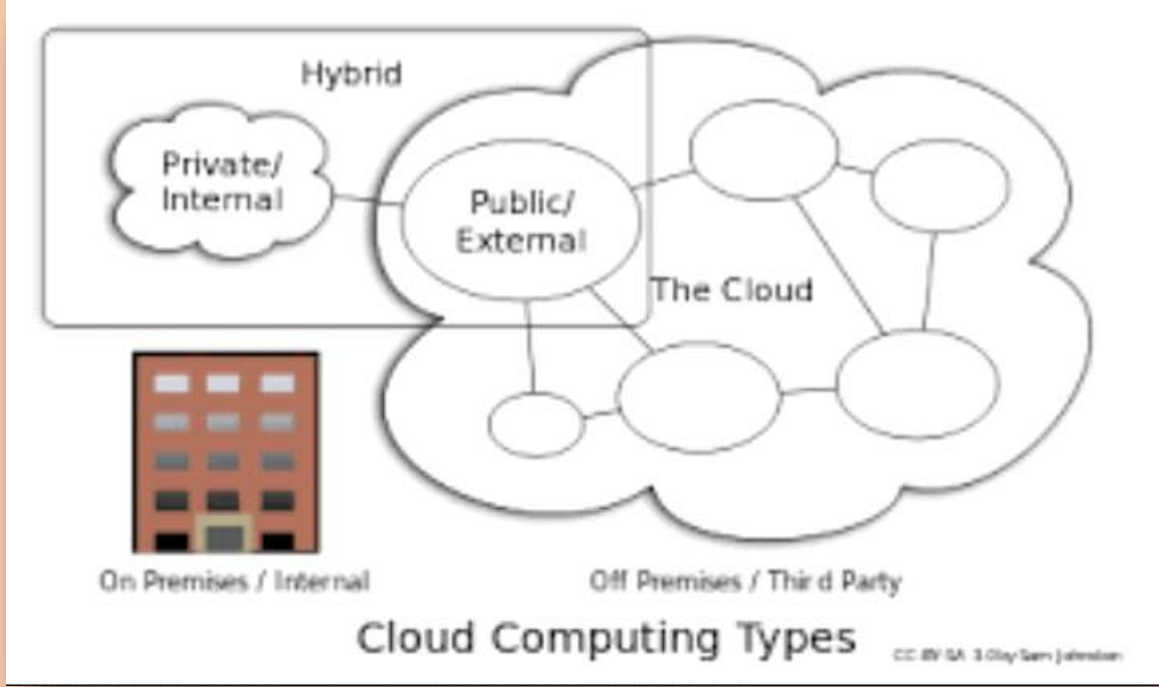
Characteristics:

Cloud computing exhibits the following key characteristics:

1. Agility –It improves with user's ability to re-provision technological infrastructure resources.
2. Cost reduction – A public cloud delivery model converts capital expenditure to operational expenditure.
3. Maintenance – Of cloud computing applications is easier because they do not need to be installed on each user's computer and can be accessed from different places.
4. Device and Location Independence – Enable users to access systems using a web browser regardless of their location or what device they use.

5.Performance –Is monitored,and consistent and loosely coupled architectures are constructed using web services as the system interface.

Deployment models:



•Private cloud – Private cloud is cloud infrastructure operated solely for a single organization whether managed internally or by a third-party and hosted either internally or externally.Undertaking a private cloud project requires a significant level and degree of engagement to virtualize the business environment,and requires the organization to re-evaluate decisions about existing resources.

•Public cloud – A cloud is called a "public cloud" when the services are rendered over a network that is open for public use.Generally,public cloud service providers like Amazon Web Services(AWS),Microsoft and Google.Technically there may be little or no difference between public and private cloud architecture. However,security consideration may be substantiallydifferent for services that are made available by a service provider for a public audience and when communication is effected over a non-trusted network.

• Hybrid cloud – Hybrid cloud is a composition of two or more clouds(private,community or public)that remain distinct entities but are bound together,offering the benefits of multiple deployment models.Hybrid cloud can also mean the ability to connect collocation, managed and or dedicated services with cloud resources.

Advantages of cloud computing:

1. Cost-saving – The most significant cloud computing benefit is in terms of IT cost savings. Business, no matter what their type or size,exists to earn money while keeping capital and operational expenses to a minimum.
2. Re-ability – Cloud computing is much more reliable and consistent than in-house IT infrastructure.
3. Manageability – Cloud computing provides enhanced and simplified IT management and maintenance capabilities through central administration of resources.

Disadvantages of cloud computing:

1. Down time security –As cloud service providers take care of a number of clients each day,they can become overwhelmed and may even come up against technical outages.
2. Limited control –Since the cloud computing infrastructure is entirely owned,managed and monitored by the service provider, it transfers minimal control over to the customer.
3. Vendor lock–Although cloud service providers promise that the cloud will be flexible to use and integrate,switching cloud services is something that hasn't yet completely evolved.

Roopa Shree T
2nd Sem BCA 'A'

Interesting Facts about Computer Viruses You Really Should Know Contd.,

- About 32% of all computers in the world (that is almost one in every three computers) are infected with some kind of malware.According to the Microsoft Security Intelligence Report and Consumer Reports, 40% of US household are affected by computer viruses.
- In order to find their vulnerabilities, Facebook pays $500 to anyone who can hack into their system.
- Despite maximum effort of computer security researchers and developers, there is currently no existing antivirus software that would be able to uncover all computer viruses.
- Viruses can be written in numerous computer programming languages including assembly language, scripting languages (such as Visual Basic or Perl), C, C, Java, and macro programming languages (such as Microsoft's VBA).
- The name of the Trojan horse, one of the three basic types of computer viruses, was derived from the Ancient Greek story of the wooden horse that was used to help Greek troops invade the city of Troy by stealth.
- Created by Filipino programmers Reonel Ramones and Onel de Guzman in 2000, the computer worm known as ILOVEYOU or the Love Letter was one of the most virulent computer viruses ever. The virus was estimated to infect up to 10% of the world's Internet-connected computers back then.
- Computer viruses currently cause billions of dollars' worth of economic damage each year, due to causing system failures, wasting computer resources, corrupting data, increasing maintenance cost etc.



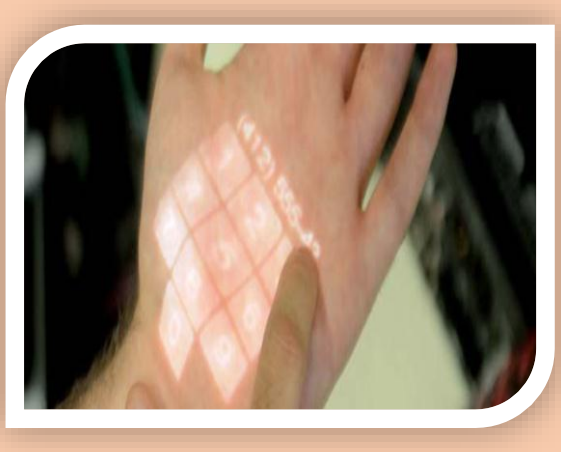
SKINPUT: ADVANCE INPUT TECHNOLOGY

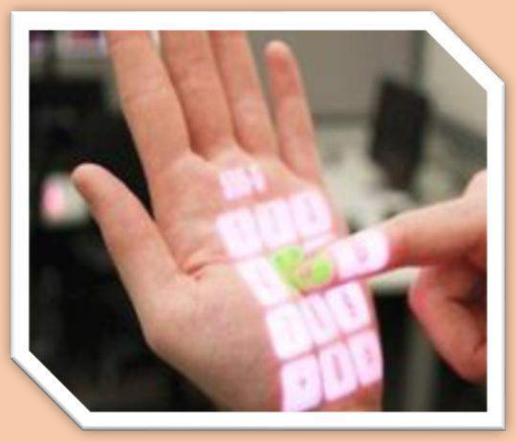
ABSTRACT
It describes about the new input sensing technology that is skin put. Skin put technology enabled device acts as an input interface. It provides a new input technique based on bio-acoustic sensing that allows the skin to be used as a finger input surface. This also allows the body to be annexed as an input surface without the need for the skin to be invasively instrumented with sensors, tracking markers, or other items.

KEYWORD: Skin put, Bio-acoustic, Finger, Pico-Projector, Palm, Proprioception.

INTRODUCTION

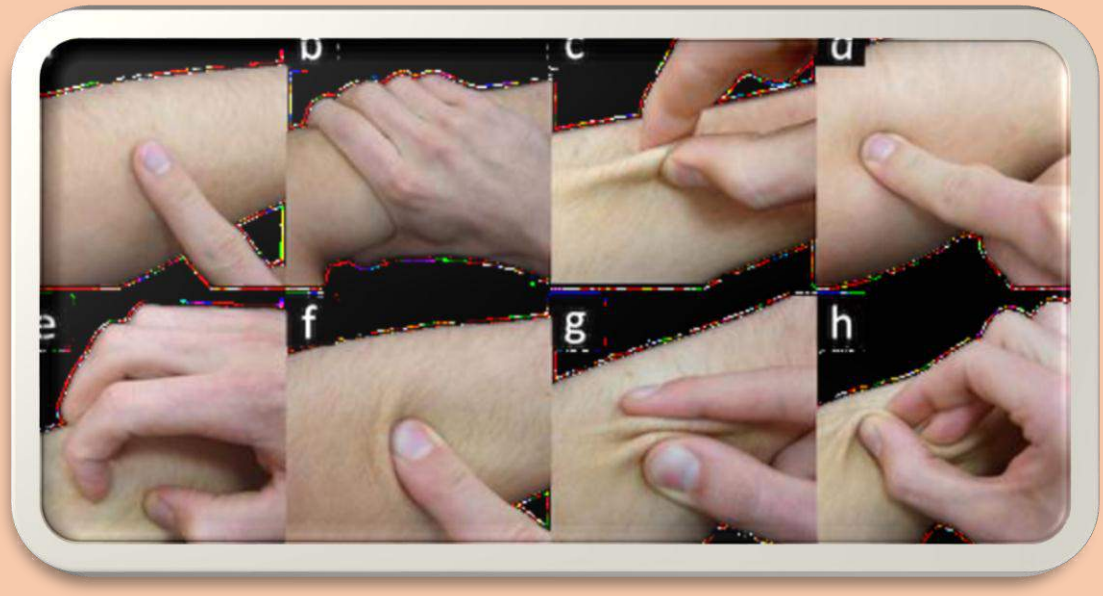
Skin put using touch on palm or hand surface





Skin put is a technology which uses the surface of the skin as an input device. Our skin produces natural and distinct mechanical vibrations when tapped at different places. However, skin is fundamentally different from conventional, off-body touch surfaces. As skin is stretchable, it allows for additional input modalities, such as pulling, pressing and squeezing. This increases the input space for on-skin interactions and enables more varied forms of interaction, for instance more varied gestures. This opens up a new interaction space, which is largely unexplored. It aims to contribute to the systematic understanding of skin as an input modality and of its specific capabilities. To start with, it focus on input on the upper limb (i.e. upper arm, forearm, hand and fingers), for this is the most frequently used location. Devices with significant computational power and capabilities can now be easily carried on our bodies. Appropriating the human body as an input device is appealing not only because it has roughly two square meters of external surface area, but also because much of it is easily accessible by our hands (e.g., arms, upper legs, torso). Skin put – a method that allows the body to be appropriated for finger input using a novel, non-invasive, wearable bio-acoustic sensor.

More than touch: Skin is fundamentally different from off body touch surfaces, opening up a new and largely unexplored interaction space. The characteristics of various skin-specific modalities, analyze what kinds of gestures are performed on skin, and study what are preferred input locations...

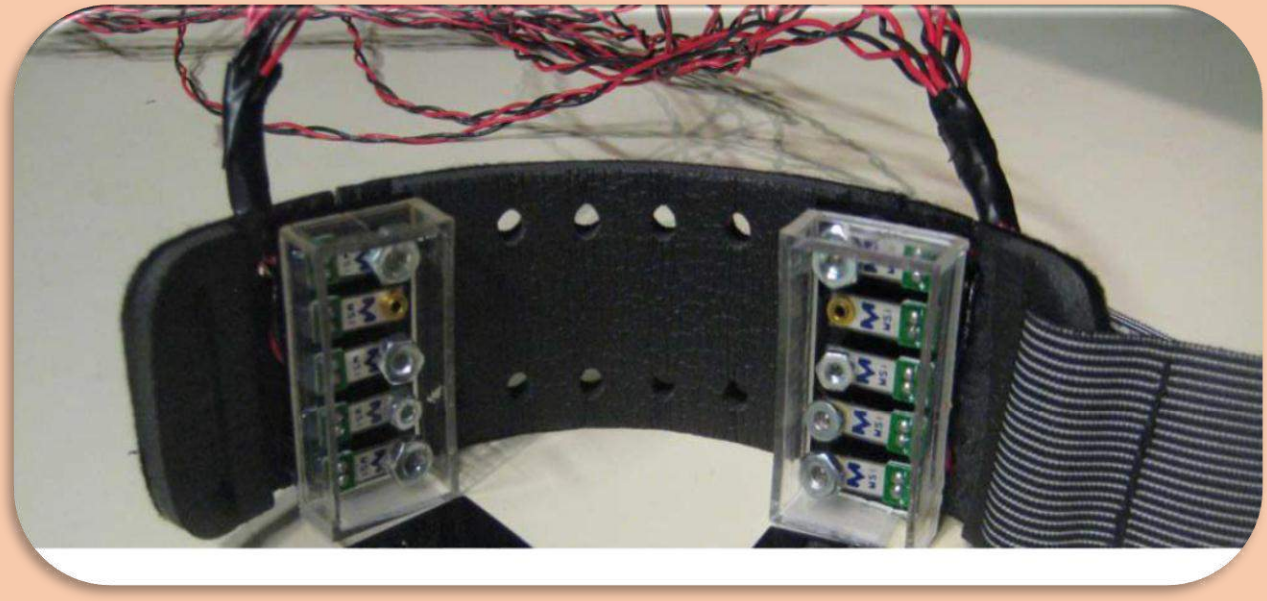


Input modalities: (a) touch, (b) grab, (c) pull, (d) press, (e) scratch, (f) shear, (g) squeeze and (h) twist the flexible nature of skin affords not only touching, but also pulling, shearing, squeezing, and twisting. Skin is capable of sensing various levels of contact force, which enables pressing. Lastly, the physiological properties of the touching finger or hand further add to the expressiveness, touch can be performed with the fingernails, resulting in scratching, or the full hand can enclose another body part resulting in grabbing. The resulting set of eight modalities as shown in Figure. It was derived from established modalities of conventional touch interfaces and from results of studies on the biomechanics of skin. These modalities are ranging from on-surface interaction to intense skin deformations. More complex gestures, e.g. rubbing or shaking, can be performed by using these basic input modalities. Note that these modalities are defined from a user perspective and not from a technology-centered one.

WORKING: Skin put uses acoustic information, to capture this information a wearable armband that is non-invasive and easily removable is employed. The Skin put sensor and the processing techniques used to segment, analyze, and classify bio-acoustic signals are studied in this section. The working is based on acoustic signals through density of tissues. Your tap on the arm translates through sensors into an instruction on a menu. The graphic display appears on your arm or hand, wherever the display is set up to be located, and from then on it's like using a cell phone. Arm is better, because the graphic display on your arm is about 200 times bigger. You can use Skin put to control devices you carry, like a dashboard setup. So in theory you can control your phone, your iPod, etc., with one tap on your arm. It really does look impressive

Acoustic Input

Its approach is also inspired by systems that leverage acoustic transmissionthrough (non-body) input surfaces. Paradiso et al. measured the arrival time of asound at multiple sensors to locate hand taps on a glass window. Ishii et al. use asimilar approach to localize a ball hitting a table, for computer augmentation of a real worldgame. Both of these systems use acoustic time-of-flight for localization, which weexplored, but found to be insufficiently robust on the human body, leading to theFingerprinting approach described.



CONCLUSION

The approach to appropriating the human body as a multi input surface where multiple acoustic sensors can be together interfaced sensing multiple touches and impressions. It described a novel, wearable bio-acoustic sensing array built into an armband in order to detect and localize finger taps on the forearm and hand. Results from experiments have shown that our system performs very well for a series of gestures, even when the body is in motion.

Sahana N
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Computer Jokes

• I'm employed at a computer security company and have a colleague whose name is M. Alware. His e-mail address is malware@company.com.

• My ex-boss's name is R. Stone. His e-mail was stoner@company.co.in.

• My name is James Pan. Every other permutation of my name was taken (e.g., jpan, jamesp), so I'm stuck with japan@university.edu.

- In a software design meeting, we were using typical technical jargon to discuss a data exchange interface with a vendor.
  One co-worker said the programming we had ordered was delayed because the vendor was suffering from a "severe non-linear waterfowl issue."
  Curious, the team leader raised his eyebrows and asked, "What exactly is that?"
  The programmer replied, "They don't have all their ducks in a row."

ODiN- The Laser Projection Mouse

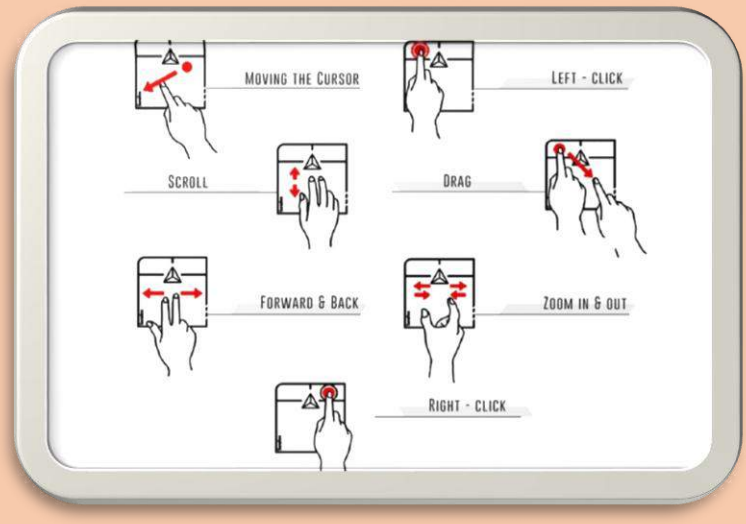




If you don't want to be reliant on (or still don't really like using) attack-pad, and tire of dragging a full-sized mouse around, then the ODiN, a laser-projected mouse, might be worth a look. You've seen laser projected interfaces that cover keyboards, but the teamthat made ODiN says it's the world's first laser-projected mouse interface.Computer mice are old news in terms of technology, but if you still rely on one, you might want to opt for a robot head laser mouse instead.

The ODiN Aurora consists of a robot module that perches on your desk andprojects a track-pad onto it that you can manipulate with your fingers tocontrol your computer. It will redefine your dailyuser habits for designing, gaming, work and everything.

The 8cm x 8cm projected area supports multipoint controls and also containsleft- and right-click panels, as well as a programmable, triangular buttonin the centre. Using the mouse on a flat surface like this supposedlyreduces the strain on the underside of your wrist.



One of the other major benefits of the Aurora, claims ODiN, is that it ishighly portable -- it weighs only 40g and can be plugged in via USB. It isalso compatible with both Windows and OS X.

ODiN Aurora presents you a whole new experience with computer and mouse, the world's first laser projection mouse redefines your daily user habitsfor designing, gaming,work, and everything. Intuitive and convenient, ODiNAurora is your must-have gadget for computers and laptops.

A triangle, innovative and extraordinary in runic alphabets, is alsoincorporated in the virtual pad design, projecting strength and courageinto our life. Say good bye to carpel tunnel- Does your arm or wrist feeltired or even hurt after holding the traditional mouse for a long time?Pain no more! The problem is solved with ODiN Aurora. As your wristcomfortably rests on the table or other surfaces, your shoulder and armmuscles can take a break, so you can focus on work, game, or both, oranything! ODiNAurora supports multipoint controls. In the 8cm x 8cmproject area, you only need, at most, two fingers to click, scroll, and drag.

Aishwarya V
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Best Quotes on Computer Science

- **92% of the world's currency exists on computers**. The remaining 8% is in physical money.
- CAPTCHA is used to distinguish computer from human. No computer has got success in solving captcha till this date. CAPTCHA stands for **"Completely Automated Public Turing test to tell Computers and Humans Apart"**.
- The first actual computer "bug" was identified in 1947 as a dead moth. It was stuck in a Harvard Mark II computer.
- All top giant companies present in the current world like Apple, Microsoft, HP, and Google started development in a garage.
- Typist fingers travel at an average rate of about 12.6 miles per day on a regular work day.
- Alaska is the only state in the world who's all letters come in a straight row of keyboard letters.
- The famous E-commerce company Ebay goes through about $680 worth of transactions that take place per second.
- Web is also developing fast. More than one million domain names are get registered online per month.
- Computer programming is the fastest growing occupation.

Counter-Strike: The Legendary Game

History



Counter-Strike (CS) was a biggest achievement in the history of game development. It was developed by Valve L.L.C and released on 8-Nov-2000 for particularly to run in Windows Operating System. Later, it was also designed for Xbox, OS X, and Linux. Counter-Strike is also known as Half-Life: Counter-Strike (HL-CS) since, it was a part of Half-Life Game (by Valve) which was bundled mainly with Counter-Strike, Team Fortress Classic, Opposing Force, Wanted, Rocket Crowbar, Scientist Hunt, Jumbot.

Gameplay





CS is a First Person Shooter (FPS) game in which players can join either the terrorist team, counter-terrorist team or spectators. Each team has different missions or objectives depending on maps:

1. **Bomb plant / defuse:** One of the terrorists (Ts) carry the bomb to one of the bomb sites. If the bomber drops the bomb, another terrorist teammate picks and continues to plant the bomb and prevent the Counter-Terrorists (CTs) from defusing the bomb. On the contrary, the CTs are supposed to prevent the Ts from planting the bomb or defuse the bomb if planted. CTs win if the time runs out before planting the bomb (C4). Defusing speed differs based on whether the bomb diffuser has bomb diffuser kit or not.




2. **Hostage rescue:**CTs must rescue a group of hostages held by the Ts to win. Ts win if the time runs out before the CTs do not rescue the hostages or eliminate the Ts.



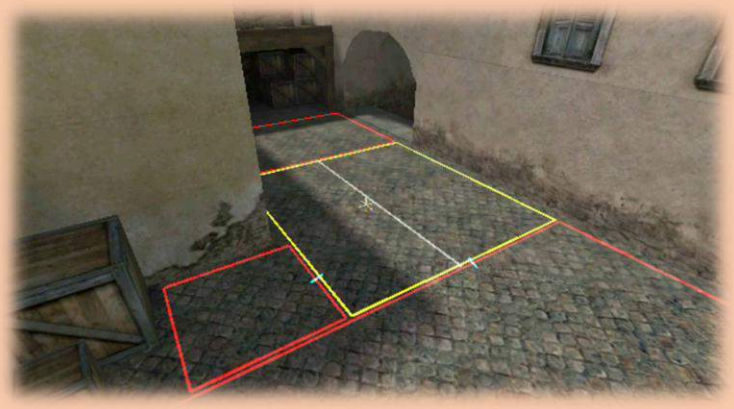
3. **VIP escort:**One of the CTs is chosen as VIP and the CT team must escort the VIP to designed spot to win the round. If the VIP is killed or the time runs out, Ts win.



Development Progress

CS was launched with Half-Life launcher. It was a Multiplayer game in which players can playeither via LAN or Internet. But, it lacked some features like Computer players (bots), map settings, spectators and independent game launcher. Valve L.L.C hired CS team to develop CS 1.6 with independent launcher. However, Artificial Intelligence used for bots was created by Turtle Rock Studios. So, CS 1.6 fulfilled all the missing features in older version of CS. Further Turtle Rock Studios developed Counter-Strike: Condition Zero which was also a great version with mission packs and accurate weapons. Other versions were also developed namely CS Source, CS 1.8, CS 1.9, CS GO (Global Offensive), CS Neo, CS Online, CS Nexon: Zombies, CS Online 2.

Bots (Computer Players)





Navigation interface tells the bot to move left, right, forward, backward directions. Bot Nav feature also tells the bot about danger. For example, if a teammate gets killed, suddenly the bot either rushes forward to shoot the enemy or fall back and wait for the enemy. i.e., it allows the bot to react based on the situation.

Aimbot is a program which automatically aims and shoots the enemy. This feature is included in every bot with different level.

So, each bot it set with specific map routes, skill level, co-operation, bravery and some other features and saved as a bot profile. There are lot of bot profiles for easy, normal, hard and expert bots each one with different skills, weapons, skins and much more.

Maps



There are lot of maps in CS 1.6. If required, the player can add maps from Internet. Even the player can create his own map if he has the license and permission from Valve. aim_headshot, cs_assault, cs_italy, cs_Office, de_aztec, de_dust2, de_inferno, de_nuke, fy_iceworld, fy_poolday,… are very popular and top maps in CS. However, de_dust2 is considered as the top and best adventurous map in whole CS game.

Valve Anti-Cheat (VAC)

CS has been target for cheating in online games since its release. So, VAC enables the players to guard the gameplay honestly and bans the cheatersfrom online game servers for some time duration, usually a week.

Weapons

Each team has their own weapons to be purchased from buy zone (base). However, some weapons are common to both T and CT teams. Top weapons used by pro players are Deagle (Night Hawk) in pistols for short range, Awp (Magnum Sniper Rifle) in Snipers for long range, Sg552 (Krieg 552), Aug (Bullpup), AK-47 (CV-47), M4a1 (Maverik) in Rifles, Flashbang and Smoke in grenade (bomb). Some weapons like G3sg1 (D3/AU1), Sg550 (Krieg 550 Commando), Shields, Smoke, and some weapons are banned by the CS World Tournament.

Why CS 1.6 is considered as the best version?

Comparing this version with CS 1.8, CS 1.9, CS Source, CS GO and other latest versions definitely makes a lot of difference. Main point is that CS 1.6 can run even in low graphics mode and in good quality. Weapons in CS 1.6 are very powerful and accurate to aim at enemy compared to other mentioned versions of CS. It is very faster and clear without any hidden perks, weapons like those which are present in other games where weapons need to be unlocked.

Advantages

1. This game has been a biggest inspiration to many game developers.
2. Many pro players have made their profession as CS players just like the Cricket players.
3. VAC ensures anti-cheat server to honest online players.
4. CS 1.6 is the most portable version. It can also run in low graphics and low memory.
5. It allows single player and multiplayer feature either via LAN or Internet.
6. Players can communicate with their teammates via headphones and speakers or by in-game messaging or by giving in-built radio commands.

Limitations

1. CS 1.6 has some bugs (can be ignored).
2. Even though VAC secures the server, cheaters still hack the server with undetectable plugins.
3. Even though there are many expert bots in this game, pro players are not satisfied since, these bots do not play equal to pro level.
4. Only bots can see in dark but not the player (This can be solved using flash light, night vision or by using gl_monolights in the console window).

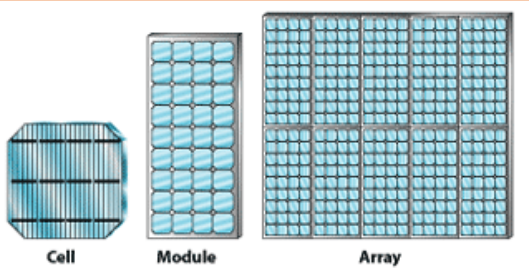
Dhruva Kumar V
4thSem BCA

What is Solar Car?

A **Solar Car** is a solar vehicle used for land transport.

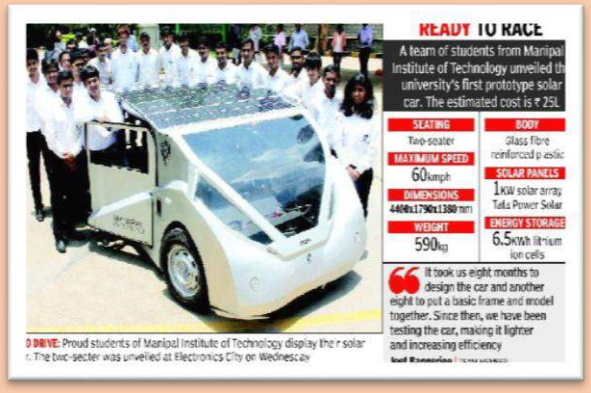
- **How does it work?** Solar Cars depend on a solar array that uses photovoltaic cells (PV cells) to convert sunlight into electricity. Unlike solar thermal energy which converts solar energy to heat for either household purposes, industrial purposes or to be converted to electricity, PV cells directly convert sunlight into electricity. When sunlight (photons) strike PV cells, they excite electrons and allow them to flow, creating an electric current. PV cells are made of semiconductor materials such as silicon and alloys of indium, gallium and nitrogen. Crystalline silicon is the most common material used and has an efficiency rate of 15-20%. The first solar family car was built in 2013.
- **PV (photovoltaic) the source of conversion** The solar array consists of hundreds of photovoltaic solar cells converting sunlight into electricity. In order to construct an array, PV cells are placed together to form modules which are placed together to form an array. The larger arrays in use can produce over 2 kilowatts (2.6 HP).

- **Arrangement of PV solar cells**



The solar array can be mounted in six ways:

- **Horizontal**
- **Vertical**
- **Adjustable.**
- **Integrated.**
- **Trailer.**
- **Remote.**



- **Battery efficiency in Solar Cars**

The battery pack in a typical solar car is sufficient to allow the car to go 250 miles (400 km) without sun, and allow the car to continuously travel at speeds of 60 mph.

- **Motor efficiency in Solar Cars**

  The battery pack in a typical solar car is sufficient to allow the car to go 250 miles (400 km) without sun, and allow the car to continuously travel at speeds of 60 mph.

Chandra Kanth A
4thSem BCA



BCA Final Year Students



BCA Staff





INCOGNITO -2016 IT Fest





Add-on training on "**Advance Web Technology"** and **"Microsoft .NET"**.

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Veeresh P	Nithin C	
Supreeth R	Supreeth R	
Vivek V Nayak	Sandeep Kumar P	