BVRIT HYDERABAD
College of Engineering for Women
Volume 4, Issue 2, September 2019
ISBN : 97893-85101 - 70 - 0

B-SMART

EDC

We Explore We Exhibit

WISE

INCUBATION CENTRE

IMAGE PROCESSING

IoT

ATL

Name to Fame
Hackathon Stories
Technical Trends

B-SMART

(**B**VRITian **S**tudent **M**agazine on **A**dvanced **R**esearch & **T**echnologies)

VISION

To emerge as the best among the institutes of technology and research in the country dedicated to the cause of promoting quality technical education.

MISSION

Empowerment of women engineers and technocrats with emphasis on academic excellence, life skills and human values.

B-SMART is here to keep the students and the faculty members informed with the latest development in the area of Science, Engineering & Technology. It also inculcates the habit of reading among students about new trends in technology and emerging areas and to provide a platform to the student for sharing knowledge.

Principal's Message

Dr. K. V. N. Sunitha,
Principal, BVRITH

"Without continual growth and progress, words such as improvement, achievement and success have no meaning"

- Benjamin Franklin

BVRIT Hyderabad College of Engineering for Women is continuously growing in all aspects. I feel glad to make reference to that, in the voyage of 7 years BVRITH is positioned 147 in Engineering Category in NIRF India ranking 2019. Our college is now registered for Institution Innovation Council (IIC), an initiative by MHRD to encourage more innovative activities in the college. Happy to share that BVRITH is recently had the honour of being placed in 'Asia Book of Record' for organizing the 'Largest Mental Health Peer Counselling for Women' on the eve of International Women's day.

BSMART- The technical magazine of BVRIT Hyderabad is very happy to reflect the technical growth that our students had and it is indeed a matter of pride to pen down the message for the 9th edition of BSMART.

Our Alumnae had always shown their excellence in whatever they do, irrespective of if it is Industry or Academics. This time in 'Name to Fame' Sowmya who received Gold medal from the University has shared her journey towards success.

Our students' passion towards applying Engineering concepts for the betterment of society is well displayed in different hackathons. Our first cover story this time is about 'iNethra' which will help remote villagers to detect the eye problems. I want to highlight that the project has won many more prizes and the concept and the students who worked on this were widely appreciated. 'iNethra' is also selected for National Cohort of the Boeing University Innovation Leadership Development Program-2019.

I wish these stories give wings to all readers' innovative thoughts and lead them forward.

I appreciate the students who contributed articles and also the faculty and student coordinators who worked enthusiastically for the magazine.

With Best Wishes
Dr. K.V.N. Sunitha
Principal

Contents

Name to Fame

Sowmya Dhumale received University Gold Medal for having secured First rank in B. Tech. (EEE) among all the graduates of JNTUH Affiliated Colleges in the academic year 2017-18.

Success has no end. But success, when it is blended with the Blessings of the Teachers, Affection of Parents and Love of the Friends, has the completeness.

I, Sowmya Dhumale is one of those fortunate students who was able to find passionate educators and to build a spiritual relationship with them at BVRIT HYDERABAD, College of Engineering for Women. Five years ago, stepping into the college as a nervous as well as enthusiastic student but without any idea on how to proceed further, I found my college laying up a visionary path and guiding me from time to time instructing me the way to follow up that path in a smooth manner.

Being the class topper in the first year and college topper in the following years made me confident enough, but at the same time made me feel more responsible on my side not to let myself down in the future. I learnt how to compare and compete with myself so that I can improve my performance in each and every aspect. My faculty helped me a lot regarding this.

The influence of a good teacher can never be erased and relationship with a teacher extends far beyond the classroom. The **'Annual Academic Excellence Award',** I received was only possible with the consistent motivation and encouragement given by Principal Dr.K.V.N. Sunitha and all my faculty members. I learnt to troubleshoot my problems with a positive mind-set.

It is rightly said that "Behind every young

'Follow your heart, listen to your inner voice, stop caring about what others think'.— Roy T. Bennett

child who believes in himself is a parent who believe first." They are neither an anchor to hold us back nor a sail to take us front, but a guiding light whose love shows us the way. My mother motivated me to read a lot many books in my

Childhood and my father is the one who asked me to dream and get up every morning to make it happen. Those caring hands laid me a path to that stage where I received my University Gold Medal for having secured First rank in B. Tech. (Electrical and Electronics Engineering) from all JNTUH Affiliated Colleges among all the graduates of the academic year 2017-18.

It is rightly said that "Behind every young child who believes in himself is a parent who believe first." They are neither an anchor to hold us back nor a sail to take us front, but a guiding light whose love shows us the way. My mother motivated me to read a lot of books in my childhood and my father always told me to dream and get up every morning to make it happen. Those caring hands laid me a path to receive my University Gold Medal for having secured First rank in B. Tech. (Electrical and Electronics Engineering) among all colleges affiliated to JNTUH in the academic year 2017-18.

Positive relationships among students are essential. They are developed through a culture of mutual respect definitely modelled and taught by the teacher. That mutual attachment with my friends led me to win Prestigious '**Best Academic Performer of the Year Award'** by Stumagz. I was nominated from my college and got shortlisted as one among the five students from all over Andhra Pradesh and Telangana. The selfless support given by my faculty and friends helped me achieve this award, definitely a pat on my back. My ambition is to become a Public Official, to serve my Nation. I dream to be in a stature which makes my every supporter feel proud of me. Apart from all these, I also have a passion for preparing greeting cards, handicrafts and to gift them to my dear ones. Education is a shared commitment among dedicated teachers, motivated students and enthusiastic parents with high expectations. Thank you all for guiding me, motivating me and making me what I am today.

Sowmya Dhumale

14WH1A0231

We wish her 'All the Very Best' to continue to achieve her dreams

'Do not fear failure but rather fear not trying.'— Roy T. Bennett

COVER STORY – 1

Winner of "Most Promising Product Award", in the 6 Week Product Development Workshop in JNTUH Excite 2019

Title : iNethra

Team Members:

Ms M.Srija (IV ECE)

Ms D.Sai Sowmya (IV ECE)

Ms K.Bhavya Sri (III ECE)

Ms. Neelima (III ECE)

Mentor :

Mr. R.Priyakanth,
Associate Professor, ECE

Mr. N.M. Sai Krishna,
Assistant Professor, ECE

Lakshmi is a daily Labour aged 42, lives in a very remote area of Banswada mandal in Nizamabad district. She has been suffering from severe eye pain and blurred eye vision from a very long time. But she neglected to go for any diagnosis as she was not aware of any eye diseases and that their negligence could lead to permanent vision loss. The reason for not going for any diagnosis also included high travelling cost to visit an eye clinic far away from her village. Because of increase in pain day by day she visited a hospital in city where she came to know that she had Glaucoma and it was the last stage of it and required an emergency operation. She then came to Pushpagiri Eye hospital, Secundrabad where we met her during our market research for Fundus camera imaging.

'The key to success is to focus on goals, not obstacles'.

After a discussion with her about her condition, we realized that there is an immediate need for early diagnosis of eye diseases in rural areas with less cost so that rural people could also get access for it.

A quest for solving this problem has raised in our minds as there was a very good platform "JHUB Excite 2019 Six week Product Engineering Workshop" " to make our idea into a real product. There we started our journey with our product "iNethra" which is used for early diagnosis of eyes especially in remote areas. In the first week of the workshop we had a review of our idea by many industry experts. In this week we had to redefine our product day by day. At the end of this week we came to an optimized solution. "iNethra" consists of a hand-held device attached to smart phone which can be used to take the retinal images of the patients. It also has an app through which the processed images are sent to the doctors for analysis. After thorough analysis, Doctor sends an acknowledgment to the customers through the app. Based on the results, the patients will be recommended to nearby hospitals in collaboration with us for further treatment if required.

Second and third weeks were the time for us to do market research where we identified our customers as the Eye care centers and Optical centers and our consumers are the people from rural areas. Here we had a great chance to meet Padmasri awardee Dr. Sai Baba Goud, Ophthalmologist and founder of Sai Jyothi Eye Hospital and many more eye specialists like Dr. Vijay Kiran from Pushpagiri Vitreo Retina Eye Institute, Dr. Madhavi Latha (MaxiVision Eye Hospital), Dr.V.Meenakshi (Vasan Eye Care All of them helped us a lot in taking the retinal images using our device. Here we also came to know some of our competitors like Zeiss, JaizReti-Cam etc. After all the reviews from our customers we designed the device as well as app during fourth and fifth week. During this evaluation process we increased our network with industry mentors like stumagz CEO, Young Entrepreneurs. In sixth week we had a chance to take the

demo of our product on some patents. Although there was a lot of competition in this field and a lot of research was going on by eye experts, we never felt it was not our cup of tea. All these happened because of the spirit in our team which continued to be the same from beginning to end. We have faced a lot of hurdles and rejection initially by customers because we are still at student level. We didn't take it negatively but with an increased spirit we continued to work on it. At last we were successful in capturing retinal images and sending the data to the doctors.

We stood in the 7th place from 40 teams and awarded the title "Most Promising Products". We have been selected for the next level of product development called "Accelerators".

"The road to success and the road to failure are almost exactly the same."

COVER STORY - 2

Second Prize winners of Project Expo conducted by JNTUH university. This team of III EEE students stood second among 25 teams.

Title :

VOICE ASSISTANCE BASED ON HOME AUTOMATION

Team Members:

Ms N.Mohana

Ms C.Anusha

Ms G.Kavya

Ms Ch.Manisha

(III EEE)

Mentor :

Mr.A.V.RamanaReddy

Assistant Professor, EEE

The need for automation has come to stay date back to 1500 years when the first water pump for metal working rolling mills for coinage strips was developed. From then till date, the automation world has continued to grow tremendously. Automation is the art of making processes or machines self-acting or self-moving, it also pertains to the technique of making a device, machine, process or procedure more fully automatic, it is a self-controlling or self-moving processes.

The main objective of this project is to control the lights by voice commands given by users. A personal assistant made popular by the amazon Echo and Echo-Dot act as interface between user and the lights. The lights are thus controlled as per commands given by user.

Automatic lights is an automated ON OFF barrier installed in the room or building to restrict access, provide ease of ON-OFF a light or provide visual privacy. As a result of civilization and modernization, the human nature demands more comfort to his life. The man seeks ways to do things easily and which saves time. So thus, the automatic lights are one of the examples that human nature invent to bring comfort and ease in its daily life. This was achieved by considering some factors such as economy, availability of components and research materials, efficiency, compatibility and probability and also durability in the design process.

COVER STORY – 3

Awarded 'Certificate of excellence' in the 'INNOVATORS CHALLENGE 2K19' in the National level hackathon held at Nallamallareddy college, Hyderabad

Title :

Drone for early pest detection: A Tool For Early Pest Detection

Team Members:

Ms. D.Neelima ,

Ms. M.Satya Sai Harshitha ,

Ms. A.keerthi

(III ECE)

Mentor :

Mr.R.Priyakanth, Associate Professor, ECE

Mr.Y.Anil Kumar, Assistant Professor, ECE

According to the statistics the crop yield losses, on field and during post-harvest period, caused by pests, diseases and weeds are of paramount importance. The loss ranges from 10 to 30% of crop production. The responsibility of protecting food crops from diseases in this challenging environment is rising with increase in human population and its needs.

We have developed a technology which has a system for mass screening of plant disease in a crop which requires minimal operator involvement. In this method an unmanned aerial or ground vehicle (drone) travels around a field, periodically taking images of individual plants in a crop. This drone has a color detection sensor (TCS3200 color sensor module), and takes the images of the crop. These images are then undergone image processing, which uses machine learning model with the help of the convolution neural networks. The result of the image processing gives us the details of the diseases which are spoiling the crop. The result consists of the details like name of the disease, Area of the crop affected, Accuracy of the result. This process helps the farmers or the field in charge to detect the diseases early so that they start taking necessary steps to stop the spread of the disease. We are using a raspberry pi 3B module for high resolution picture capturing of the crops. This drone also has an extra feature of pesticide spraying. Using the drones for spraying pesticides has many advantages because they can spray pesticides with fixed position and fixed orientation.

It reduces pollution of water and soil. This is an efficient method because it uses low cost drones.

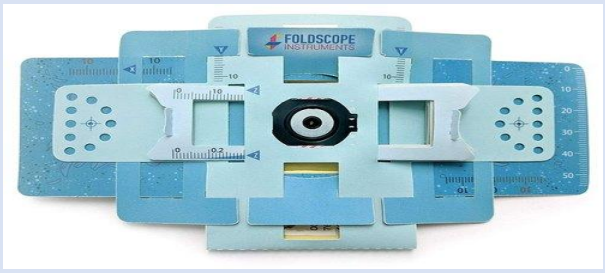
We are a team of 3 from ECE department – D.Neelima, A.Keerthi, M.Satya Sai Harshitha participated in "National level hackathon" at Nallamallareddy college with this idea and also had a great opportunity of taking our idea into a prototype at "INNOVATORS CHALLENGE 2K19" where a total of 40 teams with varied ideas and themes have participated. For our enthusiastic work in this new and emerging technology, we were awarded the "Certificate of excellence" to encourage us to take this new technology into to a fully ready to go product.

'Every new beginning comes from some other beginning's end'.

TECHNICAL TRENDS

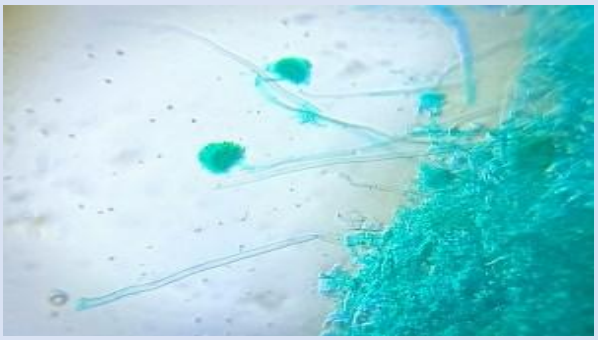
FOLDSCOPE – THE ORIGAMI PAPER MICROSCOPE

The Foldscope, as the name somewhat implies, is a microscope crafted primarily out of paper which magnifies the wonders of microscopic world without the bulk and expense of a conventional research microscope. Foldscope is a real microscope which is affordable and can be used anywhere with magnification and resolution sufficient for imaging live individual cells, swimming bacteria and much more.



It makes science happen anywhere , anytime.

Foldscope is a student-friendly microscope that fits into a geometry box which you can assemble yourself and designed to be extremely portable, durable, and to give optical quality similar to conventional microscopes.



References:
https://www.foldscope.com/our-story

M. Satya Sai Harshitha
3rd year,ECE

CYBERTHERAPY

Cybertherapy is a new era in the world of physical treatment. Technology is advancing at a super rate where science penetrates through many fields. The advancement of digital technology applied in the field of physiotherapy produces a term known as cybertherapy.

In cybertherapy, patients who need physiological treatments use wireless interface with their doctors.

The essence of this therapy is to aid

physiological treatment which have to do with audio messaging, texting, voice messaging and video call and explainer messages between therapist and client.

Simulators such as Therapeutic sound, Electrical muscle and transcutaneous electrical nerve and electrical twitch obtaining intermuscular are few technologies that help psychologists perform better.

Cybertherapy has gone long way to proffer the e-therapy solutions that help patients perform some exercises by themselves without the presence of physicians. With these concept, cybertherapy has experienced great growth and wider recognition in health sector.

Reference: https://www.dr-hempel-network.com/digital-health-technolgy/digital-solutions-for-physiotherapists/

M.Akshitha
1st year,CSE

Y2K @ 2038…..???

Y2K is a numeronym and was the common abbreviation for the year 2000 software problem.Y2K bug is also named as MILLENIUM BUG, is a class of computer bugs related to formatting and calendar data.

Why Y2K actually happened?

It happened because of the way in which some early computer programs were made to handle only years containing two digits (for ex: '92 as 1992) Engineers shortened the data because data storage in computers was costly and took up a lot of space.

Crisis caused:

Banks which calculate interests' rates on a daily basis, instead of the rate interest for one day the computer would calculate a rate of interest for minus almost 100yrs. Also in Japan, NTT mobile network communications, Japan's largest cellular operators reported on 1 Jan 2000 that

same model of mobile phones deleting newer messages rather than older as memory is full and many more.

Will Y2K happen again?

Yes. The 2038 problem will occur on 19th January 2038 at 03:14:07 *(coordinated universal time).* At this point computer servers will reach the largest number representable in a 32-bit integer, which means that the systems will not be able to decipher between the year 1970 & 2038 and will go to negative counting up from 2,147,483,647 to zero.

What is 2,147483,647: Number of seconds passed since 1st January 1970 (Unix Epoch Time) is the date when Unix computers started and anytime since that date is calculated based on the number of seconds elapsed.

Reference: www.sciencedaily.com

R. Sreeja Reddy

1st year,ECE

CHANDRAYAAN-2

Some countries have moon on their flags……While, some countries having their flags on moon. India is one of the five countries having their flags erected on moon.

"Proud to be an Indian "

22 July 2019 [14:43:12IST] something remarkable took place in second launch pad of Satish Dhawan Space Centre, Sriharikota, India. It was the launch of GSLV Mk III by ISRO.

It consists of Orbiter, Vikram Lander, Pragyan rover, all developed in India. The main scientific intension is to locate the abundance of lunar water. The lander and the rover are planned to land in the south polar region of moon on 7th September 2019. While the lunar rover named Pragyan will move on the surface of the moon performing on-site chemical analysis for one lunar day (14 days)."The payloads will collect scientific

information on lunar tropology, mineralogy, elemental abundance, lunar exosphere and signatures of hydroxyl and water ice", said ISRO on its website.

On 12 November 2007, Russia Federal Space Agency (Roscosmos) and ISRO signed an agreement to work together on the mission Chandrayan-2 .ISRO took the prime responsibility for the orbiter and rover, while Roscosmos was to provide the lander. But, Russia was unable to provide lander even by 2015. So India decided to develop the lunar mission independently.

A successful landing would make India the 4th country to achieve a soft landing on the moon, after space agencies of the USSR, the USA, China.

MERA BHARAT MAHAN

Reference:

www.wikipedia.com

Ch. Lakshmi Chaturya

1st year, CSE

DUCK-THE AGBOT

Robot farming is playing an active role in present generation since robots do not get tired. The Duck Robot fulfils the wish of every farmer to grow the crop without using pesticides which kills the pests but harms the crop. This Agbot (Agriculture Robot) was developed by a technician Tetsuma Nakamura of automaker Nissan motor co.<7201>. It is shaped like a robotic vacuum cleaner which is about sixty centimetres square and weighs 1.5 kilograms.

Duck Robot is released into the water of paddy fields which automatically moves in the field and hinders the photosynthesis of the weeds so that they will be removed from the roots. This agbot will also eat weeds seeds and acts as additional fertilizer which differentiate this agbot from the others. It uses Wi-Fi, batteries, solar power, GPS to navigate the fields. This robot is a combination of

both old and new agriculture technologies. Now this robot is being tested in Yamagata Perfecture, north-eastern Japan.

Reference: https://www.designboom.com/technology/nissan-robot-duck-rice-fields-farming-weeds-06-24-2019/

K.Akanksha

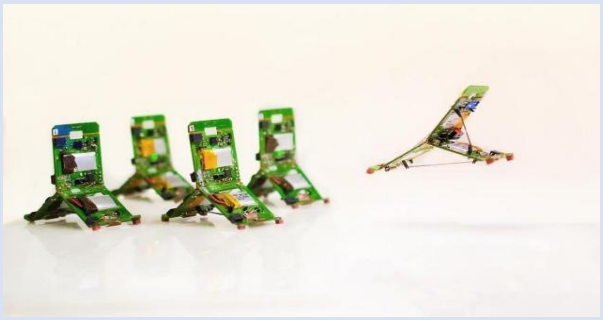
1st year, ECE

ROBOTIC ANTS FUNCTION JUST LIKE REAL ONES !!

Isn't it is amazing that robotic ants will be working as normal as real ants? But what is the working process behind it? Lets have a look.

Researchers from Switzerland and Japan on collaboration, created a miniature robot called "tribot" weighing 10 grams. The tribots are functioned like drop-jaw ants do in their colonies. Tribots have potential for various applications like emergency relief situations and exploration missions.

Tribots are designed in such a way that if one tribot collapses or stops working, the other tribot will take the responsibility, just like normal ants do in their colonies.



Miniature robots has the capacity of working like normal robots. The additional advantage is that due to its mini size, these are ideal to perform duties in tiny spaces.

Similar to real ants, tribots can be set to have different features like vertical jumping, crawling on flat surfaces, walking on terrain areas and can have different power levels.

Tribots have in-built battery within it and sensors which is used to clear obstacles and for communication with other tribot insects. For present, these exits as prototypes.

Reference:www.popularmechanics.com

MNS Yamini

3rdyear,CSE

'Just trust yourself, then you will know how to live'- Johann Wolfgang von Goethe

AIR PURIFYING TOWER

Features:

- 7 meters (23 feet) high structure.
- Removes ultra fine particles from air using a patented ion-technology developed by scientists at Delft University of technology.

The problem with the current air pollution control systems is that they reduce but do not eliminate pollution.

Dutch innovator, DaanRoosegaarde, in collaboration with ENS technology and the Delft University of technology, developed large scalable towers that remove pollution emitted into air.

This technology was developed to remove MRSA bacteria from dust particles.

The bacteria would spread from human to human through air. To prevent this, air ionizers have been set up to prevent spreading of bacteria.

This tower cleans 30,000 cubic meters of air per hour without using ozone and uses about 1,400 watts of electricity. Air from the surrounding area of the tower is drawn into the structure. All airborne particles receive an electric charge. The

charged particles are captured and settle on a large collector plates that have an opposite electric charge.

The clean air is blown from the tower back into the environment.The tower is currently being tested in Beijing by Chinese ministry of environmental pollution.

This invention won the German design award for excellent product design by German ministry for economics and technology.

Reference: https://www.inventor-strategies.com/Latest-technology-inventions.html

P. Aparna

1st year, IT

KENGURU ELECTRIC CAR

Kenguru electric car, It is an advanced technology which is useful for the person who lost their legs due to pole or in an accident such as wheel chair users. Few years before,Deccan motors designed hand operated cars for disabled persons With lower limbs . But, there is a major disadvantage in those cars,i.e most people need to collapse their wheel chairs and transfer themselves into the vehicle ,which can be time consuming and difficult .

The kenguru is an electric car in which drivers can remain in their wheelchairs.Stacy zoern is the founder and CEO of this product. He struggles with muscular atrophy.It is considered as “community car”, which reaches 25 miles per hour.It is used for short journeys. So, many handicapped persons are benefited by this car.

Reference: www.kengurucars.co.uk

V. Anusha

1st year, CSE

ROBOTIC PROCESS AUTOMATION

Robotic process automation (RPA) is the use of software with artificial intelligence and machine learning capabilities to handle high-volume, repeatable tasks that previously required humans to perform. These tasks can include queries, calculations and maintenance of records and transactions. RPA technology consists of software robots (bots) that can mimic a human worker. RPA bots can log into applications, enter data, calculate and complete tasks and then log out. Currently, practitioners divide RPA

technologies into three broad categories: probots, knowbots and chatbots.

Pro**bots** are bots that follow simple, repeatable rules to process data. Knowbotsare bots that search the internet to gather and store user-specified information. Chatbots are virtual agents who can respond to customer queries in real time.

RPA software is not part of an organization's IT infrastructure. Instead, it sits on top of it, enabling a company to implement the technology quickly and efficiently -- all without changing the existing infrastructure and systems. What distinguishes RPA from traditional IT automation is the ability of the RPA software to be aware and adapt to changing circumstances, exceptions and new situations. Once RPA software has been trained to capture and interpret the actions of specific processes in existing software applications, it can then manipulate data, trigger responses, initiate new actions and communicate with other systems autonomously.

Benefits of RPA:

Robotic process automation technology can help organizations on their digital transformation journeys by:

- Enabling better customer service.
- Ensuring business operations and processes comply with regulations and standards.
- Allowing processes to be completed much more rapidly.
- Providing improved efficiency by digitizing and auditing process data.
- Creating cost savings for manual and repetitive tasks.
- Enabling employees to be more productive.

Applications of RPA:

Some of the top applications of RPA include:

Customer service: RPA can help companies offer better customer service by automating contact center tasks,

including verifying e-signatures, uploading scanned documents and verifying information for automatic approvals or rejections.

Accounting: Organizations can use RPA for general accounting, operational accounting, transactional reporting budgeting.

Financial services: Companies in the financial services industry can use RPA for foreign exchange payments, automating account openings and closings, managing audit requests and processing insurance claims.

Healthcare: Medical organizations can use RPA for handling patient records, claims, customer support, account management, billing, reporting analytics.

Human resources: RPA can automate HR tasks, including onboarding and offboarding, updating employee information and timesheet submission processes.

Supply chain management: RPA can be used for procurement, automating order processing and payments, monitoring inventory levels and tracking shipments.

Although the term "robotic process automation" can be traced to the early 2000s, it had been developing for a number of years previously. RPA evolved from three key technologies: screen scraping, workflow automation artificial intelligence. Screen scraping is the process of collecting screen display data from a legacy application so that the data can be displayed by a more modern user interface. The advantages of workflow automation software, which eliminates the need for manual data entry and increases order fulfilment rates, include increased speed, efficiency accuracy. Lastly, artificial intelligence involves the ability of computer systems to perform tasks that normally require human intervention and intelligence.

Today, RPA software is particularly useful for organizations that have many different and complicated systems that need to interact together fluidly. For instance, if an electronic form from a human resource system is missing a zip code, traditional

automation software would flag the form as having an exception and an employee would handle the exception by looking up the correct zip code and entering it on the form. Once the form is complete, the employee might send it on to payroll so the information can be entered into the organization's payroll system. With RPA technology, however, software that has the ability to adapt, self-learn and self-correct would handle the exception and interact with the payroll system without human assistance.

Reference:

https://internetofthingsagenda.techtarget.com/definition/robotic-process-automation

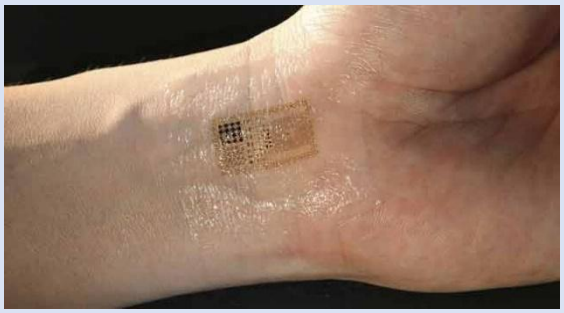
T. Pushpa Kavya

3rd year, EEE

NEW E SKIN INNOVATION GIVES ROBOTS AND PROSTHETIC DEVICES A SENSE OF TOUCH

An artificial nervous system abbreviated ABES i.e., Asynchronous Coded Electronic Skin makes the robots and prosthetic devices have a sense of touch equivalent or better to that of human skin.

This innovation was achieved by Assistant Professor Benjamin Tee and his team at National University of Bangalore.



This new electronic skin system achieved ultra-high responsiveness and robustness to damage and can be paired with any kind of sensor skin layers. It can detect signals like human sensor nervous system.

Construction: The ACES is made of a network of sensors connected via a single electrical conductor, unlike the existing electronic skin which have wiring systems.

The human nervous system is very efficient and works all the time.It is also very robust to damage.So,Tee had made tremendous advancement in the field of robotics where electronic skins are predominantly applied. ACES can identify shape, texture and hardness of objects within 10 milliseconds. It can

detect touches more than 1000 times faster than human sensory nervous system.

Tee says,"ACES can be easily paired with any kind of sensor for example those designed to sense temperatures and humidity. This type of electronic skin can be used to restore the sense of touch of disabled individuals. "

ACES' simple writing system and remarkable responsiveness even with increasing number of sensors will facilitate scale up of intelligent electronic skin for AI applications in robots and prosthetic devices.

Reference:

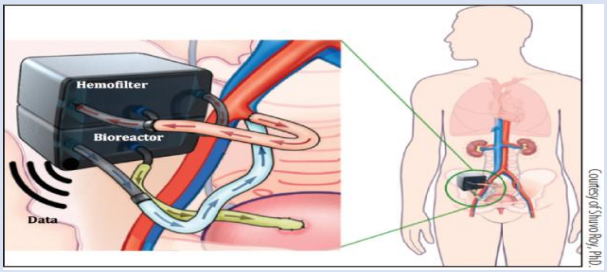
www.sciencedaily.com

M.Lekhya Sri

1st year,CSE

NANOTECHNOLOGY AT HUMAN SERVICE

Where there is hope, there is faith. Where there is faith, miracles happen. It's truly going to be a miracle when the BIO ARTIFICIAL KIDNEY would be implanted into the body of renal patients and filter the blood just like the natural kidney to eliminate haemodialysis or kidney transplantation in renal patients. Everything is designed. Few things are designed well. This is true of the bio artificial kidney designed by Shuvo Roy, an engineer and William Fissel, a nephrologist leading the National Kidney Project at University of California and San Francisco along with many collaborators.



The device has two parts. First the haemo filter and second, a bioreactor. Haemo filter uses silicon membrane with nano pores and can filter blood at very low energy powered by patient's own blood pressure without any mechanical pump. This was possible due to nanotechnology, a modern science which allows us to create, explore and manipulate materials measured in nanometer (billionth of a metre).

Engineers constructed a device which is light, surgically compatible, possible for mass production and worked on mechanics of blood flow to connect the device to blood vessels to prevent leaking of blood.

The major challenge was to resist protein absorption which would block the pores and result in blood clot. Once again, it was the engineers who found a solution. They developed a method to graft layers which are one or two molecules thick on the membrane without blocking pores.

Bioreactor has cultured human renal tubule cells from donor which have been cultured using tissue engineering. It filters blood.

Reference: www.nanowrek.com

Lakshmi Harita

1st year, EEE

PATIENT MOBILITY MONITORING SYSTEM

New technology now makes it possible to electrically monitor and automatically document a patient's mobility progression to help avoid the many serious complications associated with immobility. By maximizing patient mobility, patients can leave the hospital faster, healthier, and far less likely to require readmission. The main motto of this system is automatically monitor patients throughout the mobility continuum.

In our day to day life we observe any one of the hospital management will take care of the patient. This system makes that work more easier. Features of this system are coordinated patient mobility programs help prevent costly complications, detailed patient mobility is at your fingertips, access to real-time patient status and visual notifications, automatically documents patient ambulation record.

Patient Status:

Room	Patient	Time Until Next Turn	Position	Information
2301	M.S.	1:57	L [B] R	Upright
2302	D.C.	0:14	[L] B R	
2303	S.S.	TURN DUE 0:03 OVER	L B [R]	
2304	M.L.	1:51	L B R	Prone
2305	G.C.	Ambulating		
2306	D.L.	0:42	[L] B R	Upright

It monitors and record patient position (including upright angle) and notifies staff when interventions are needed. A digital

timer indicates the time remaining until a turn is required, as per the patient's prescribed turning protocol. As soon as a patient leaves their bed or chair, the system temporarily suspends their protocol and begins monitoring and documenting steps taken, distance travelled, time spent and ambulating and number of ambulation events. The whole data is recorded using 3 main aspects; patient sensor, antennas and user interface.

On the whole, this technology makes patient's stay comfortable, healthier and more conscious in the hospital.

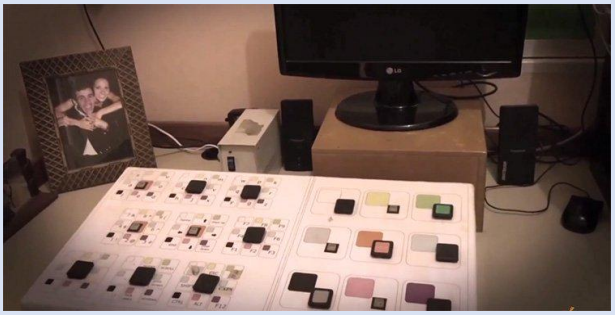
Reference:
www.hitechanswers.net

V. Sravya

2nd year, ECE

KEY-X – Smart Keyboard for People with Disabilities

If you are differently abled, Why to stop yourself in using the specialised tools, smartphones and computer efficiently? KEY-X a special keyboard for specially-abled people. It makes you believe that there is no limitation for dreams and they are not bounded by physical disabilities. It is a Multifunctional keyboard with just an eleven touch-sensitive keys. It is so awesome that, we can even operate it by the blink of an eye in case the disability is so severe. It allows the user to control the cursor on the screen by using left click , right click, drag as usual as a common mouse.



KEY-X is easy to understand, use and install, as it doesn't require any particular software to be used for browsing the internet. It is developed in Brazil and has been used by 2000 people with different kinds of disabilities. Singularity University highlighted this

KEY-X device for its high rated technologies in solving the world's most interactive problems. It was designed by Key2Enable and to be the good resource for a person to easily write, read and play with a computer without depending on others.

KEY-X is one of the best devices for the people with Cerebral Palsy without which, their dreams would be left unfulfilled and many thoughts would be left unexpressed.

SaniaThahaseen

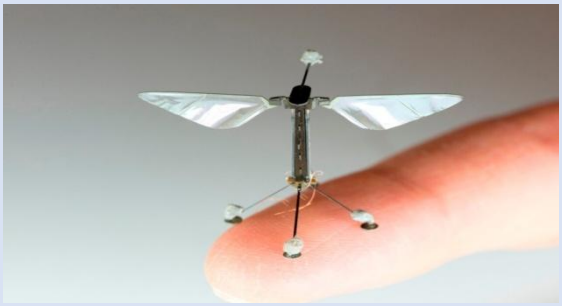
3rd year, CSE

THE BUZZ OF A ROBOBEE

The invention of a tiny flagging-wing robot has buzzed a winning milestone in the field of micro robotics. RoboBees, inspired by the biology of one of the most busy and useful insect-the buzzing bee, are tech savvy saviors in crop pollination, search and rescue missions, surveillance, and weather, climate and environmental monitoring.

Tiny Structure

These autonomously flying micro robots are as tiny as half the size of a paper clip and weigh less than one-tenth of a gram. The secret technique behind their flight is the use of artificial muscles which are made up of materials that contract when a voltage is applied. They are even developed to transition from mimicking a submarine and swimming underwater to flying like an actual bee, as well as perching on surfaces through static electricity.



The Developmental Story

The development of RoboBee is segregated into three basic segments.

- **Body**

  Body development consists of constructing robotic insects able to fly on their own with the help of a compact and seamlessly integrated power source.

- **Brain**

  Brain development is concerned with "smart" sensors and control

electronics that mimic the eyes and antennae of a bee, and can sense and respond dynamically to the environment.

- **Colony**

  The Colony's focus is about coordinating the behavior of many independent robots so they act as an effective unit.

Advantages

- Evidently, flapping-wing robots are a step-up over the fixed-wing drones and quad copters (four-rotor helicopters). They have many advantages:
- Flapping wings make animals and machines highly agile and maneuverable—for example, bats can fly with ease through basements, caves and dense forests.
- Flapping wings typically move with lower tip speeds than do propellers, and are therefore quieter and inflict
- 97less damage if they come into contact with people or property.

Biologists can use flapping-wing robots to address fundamental questions about the evolution of flight and the mechanical basis of natural selection.

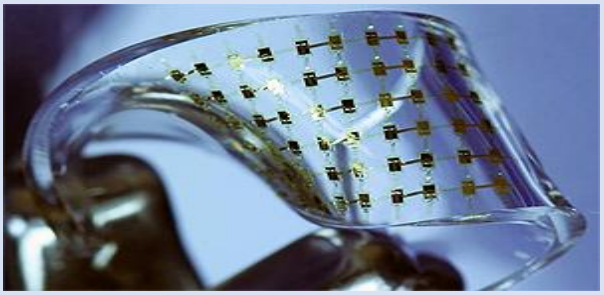
Reference:www.wired.com

Ch. Suma Sri

2nd year, ECE

STRETCHABLE ELECTRONICS

Along with the development of electronics with various characteristics for different applications, stretchable electronics is emerging as a promising new technology for the next generation. Stretchable electronics is a technology for building electronic devices by depositing stretchable electronic circuits onto stretchable substrates, or embedding them completely in a stretchable material such as silicone or polyurethane.



It enables a range of new applications, including cyber skin for robotic devices, flesh-like devices with embedded electronic nervous systems. Flexible, soft and stretchable forms of electronic devices enable next-generation wearable electronics applications, opening up various avenues for healthcare, energy and military purposes. Stretchable electronics is emerging in different fields such as energy conversion and storage, supercapacitors, lithium-ion batteries, zinc-based batteries and nanogenerators. Further, adding transparent properties to stretchable electronic device will make it possible to applications like stretchable transparent electrodes(STEs),transparent and stretchable electronic devices(TSEDs).

Development of stretchable electronic devices is not a new concept. A wide range of stretchable electronic devices are being investigated. By integrating multiple stretchable components such as temperature, pressure and electrochemical sensors, it is possible to create a material resembling human skin that could use signals from sweat, tears or saliva for real-time, non-invasive healthcare monitoring, as well as for smart prosthetics or robots with sensing capabilities.

There are several challenges involved in finding suitable materials manufacturing methods. The biggest challenge for making stretchable electronic devices is that each component must endure being compressed, twisted and applied to uneven surfaces while maintaining its performance.

Reference:www.livescience.com

K. Shruthi Sree

1st year, EEE

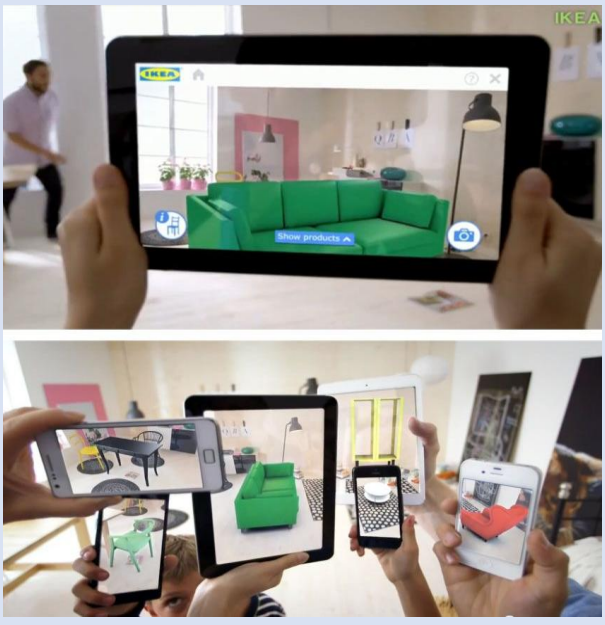
AUGMENTED REALITY

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are enhanced by computer-generated perceptual information,

sometimes across multiple sensory modalities, including visual, auditory, hepatic, somatosensory and olfactory. Here are some of the best examples of augmented reality technology we've seen to date.

IKEA Mobile App

The retailer began experimenting with augmented reality back in 2012, when shoppers could use the app to see how tables and shelves would look in various places around your house. IKEA is taking it a step further with its IKEA Place app, which now allows you select anything from the store's catalogue and see how it will look to scale anywhere in your house.



Nintendo's Pokémon Go App

You really can't have an augmented reality conversation without mentioning Nintendo's Pokémon Go app.The smash hit of 2016, Pokémon Go allowed users to catch their favorite Pokémon by looking through their phones at the real world – but with superimposed images.

Google Pixel's Star Wars Stickers

Using the same basic idea as Pokémon Go, Google added a feature to the camera of its Pixel phones that allowed users to input AR stickers into pictures and videos. If you had a friend with a Google phone, you probably received at least one photo of a random Stormtrooper.

L'Oréal Makeup App

Similar to the idea behind IKEA's app, Beauty Company L'Oréal has a mobile app that will allow users to try out various types of makeup. Think of it like a Snapchat filter. The app identifies your face and then will virtually show you what you would look like with a certain shade or colour of a specific product

U.S. Army

Not all examples of augmented reality are fun and games. The United States Army is experimenting with augmented reality programs to be used in combat that would help soldiers distinguish between enemies and friendly troops, as well as improve night vision.This technology is still in development and may be years away from deployment, but military officials say this innovation would improve combat efficiency and help save lives.

Reference:

www.realitytechnologies.com

K. Madhumitha

2nd year, ECE

THE INSERTION OF EMOTIONS IN ROBOTS

Robotics is a technology that is expected to change the world and the way we live. With every generation man has devised one object or the other which greatly reduced his work load and made life easier for him. One of such creations is a robot. The robots can do everything

a man can; but it doesn't emote or feel.

During the early stages of robotics research, much of the development was focused on the usefulness of robots in industrial purpose and settings.

From these controlled setting the robots are gradually deployed in homes and social contexts thus they require interaction.

Emotions are essential for that interaction. Hook defined the Affective Loop in 2009. It is an interaction process in which the user first expresses her emotions through gestures or manipulations; and the system then responds by generating affective expression, using for example, colours, animations etc which develops friendly interaction between user and system. Dautenhahn (2004) stated that, "rather than relying on an inbuilt fixed repertoire of social behaviours, a robot should be

able to learn and adapt to the social manners, routines and personal preferences of the people it is living with". In the future, it is most expected that emotion sensing will rule the whole robotics industry.

Reference:www.wikipedia.com

K.Ashwini

3rd year, CSE

OCCULUS RIFT

Oculus rift is a type of headset which creates virtual reality gaming. This is a 3D headset which creates or makes the person to visualize as if we are actually inside the game. It was developed and manufactured by Oculus VR, a division of Facebook.

The Rift has two Pentile OLED displays, 1080 *1200 resolution per eye, a 90Hz refresh rate, and 110°fiel of view. The device also featuresrotational and positional tracking and the integrated headphones provide a 3D audio effect.

This has an input of 6DOF (3-axis rotationaltracking+3-positional tracking) through USB connected IR LED sensor which tracks through constellation method. The smaller one are oculus touch controllers.

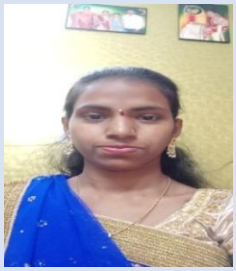
This is very useful in education also. This is used as an education tool in universities and schools. It is also used in medical field, health sciences and exercises. This is also used in increasing uptakes in various fields like marketing, architecture, computer science and paramedics.

This device can be used at a very reasonable cost of $300. With these children can enjoy. This is the beginning of revolution for the next generation. We are now entering in to a world of virtual reality topic. And in future this may turn to realism where the rift is our first step.

Reference:https://www.hongkiat.com/blog/revolutionary-products/

V.Sai Sudha

1st year, CSE



PRIDE OF RUSSIA: FEDOR (THE ROBOT)

It was the Amazing Technology by Russians who sent first Humanoid robot into the space from their country.

It was not the first humanoid robot sent into the space. By turning the history pages we can find the first humanoid robo into the space by America named as **ROBONAUT 2.**

In 2011, NASASent up Robonaut 2, a humanoids robot developed with a general motors that had a similar aim of working in high-risk environments.It was flown back to the earth in 2018 after experiencing some technical problems. We can also find the humanoid robot developed by japan named **KIROBO.**

FEDOR known as Final Experimental Demonstration Object Research. The humanoid robot is 5 feet 11 inches (1.83m) height and weighs 160 kgs. It was sent up on August 23 in Soyuz MS-14 space craft from Russia's Baikonur Cosmo drome in Kazakhstan. The plan is to spend one week and one half abroad the orbital out post. The model is named as skybot F-850.

It is failed due to issues related to Automatic Docking system.The space craft is 96 meters away from the station and official plan to attempt docking again on Monday (26-08-2019) morning. However no one can imagine what was going to happen. Whole world is waiting for its result.

Reference: www.livescience.com

T. Sripriya

1st year, EEE

NEURAL SENSING IN AVIATION

It sounds like something out of fiction movies,animation world,books etc. the brain signals controlling the flight which in an unbelievable fact. Neural sensing, in the simplest words **BRAINFLIGHT** makes the control system of the flight to

interrupt the signals from the brain and convert them into the commands to the flight .The operator wears a skin tight head cap which picks up electric signals from brain activity and was able to control the aero plane path by thinking about the movements he wanted it to go which is very interesting.

The activity behind the neural headsetis it uses Electroencephalography (EEG) sensors to measure the billions of neuron transmissions that occur in the brain. As for our surprise if the operator wants to go right he would concentrate on the right side of the computer screen .The test of this project took place at the small airport in Portugal.

The three countries involved in this project are Portugal, Germany, Netherlands. Essentially, the electricity flowing through the brain of the operator acts as an input to the control system of flight.The total cost for this project was estimated to be $873657.The honey well engineers worked on it for 2 years.

Reference:

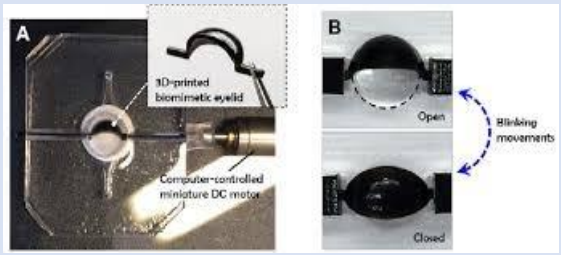
https://www.aviationtoday.com

S. Sai Harshitha

1st year, IT

BLINKING EYE-ON-A-CHIP

Most of us spend most of our time on computers, smartphones in this era. The jobs these days require us to spend more than 8 hours on computer. As a result, our eyes become tired or dry, and, if the conditions are severe, may lead to dry eye disease (DED). DED is a common disease with shockingly few FDA-approved drug options, partially because of the difficulties of modelling the complex pathophysiology in human eyes. Enter the blinking eye-on-a-chip: an artificial human eye replica.



'Success is how high you bounce when you hit bottom.'-George Smith Patton, Jr.

An eye model that could imitate a healthy eye and an eye with DED was engineered by University of Pennsylvania , allowing to test an experimental drug without risk of human harm.

The study was led by Dan Huh, associate professor in the Department of Bioengineering, and graduate student JeongyunSeo.

To construct eye-on-a-chip, a porous scaffold engineered with 3D printing, about the size of a dime and the shape of a contact lens, on which they grow human eye cells. The cells of the cornea grow on the inner circle of scaffolding, dyed yellow, and the cells of the conjunctiva, the specialized tissue covering the white part of human eyes, grow on the surrounding red circle. A slab of gelatine acts as the eyelid, mechanically sliding over the eye at the same rate as human blinking. Fed by a tear duct, dyed blue, the eyelid spreads artificial tear secretions over the eye to form what is called a tear film.

DED conditions were evoked in the eye-on-a-chip by cutting their device's artificial blinking in half and carefully creating an enclosed environment that simulated the humidity of real-life conditions. When put to the test against real human eyes, both healthy and with DED, the corresponding eye-on-a-chip models proved their similarity to the actual organ on multiple clinical measures. The eyes-on-a-chip mimicked actual eyes' performance in a Schirmer strip, which tests liquid production; in an osmolarity test, which looks at tear film salt content; and in a keratography test, which evaluates the time it takes for a tear film to break up.

The biomimetic microdevice provides new opportunities to develop novel in vitro eye models that allow for replication, visualization, and analysis of key biological processes involved in a wide variety of physiological and pathological situations in the human eye. The human blinking eye-on-a-chip system offers the promise to address critical technical barriers to progress in ophthalmology and many related areas. Moreover, this approach may enable the development of human disease models that represent cost-effective and more predictable alternatives to conventional

animal models for the identification and development of new therapeutic approaches.

Reference:

https://www.sciencedaily.com/releases/2019/08/190805134020.htm

Bhavya Sree. A

1st year, CSE

NEW SPACE TIME 4D CLOCK

Researchers have woken up to the idea that a "space-time crystal" would keep time accurate even after the universe dies. Although the concept sounds interesting, the scientists are yet to find a way to build the structure.

Frank Wilczek, a physicist at Massachusetts Institute of Technology (MIT), had earlier proposed the idea but only proved it mathematically. Now a team of researchers from California's Lawrence Berkeley National Laboratory has decided to make it a reality. The team suggested that the creation of a 4D clock will help understand the most complicated phenomena like entanglement, where the action of one distanced particle impacts the other.

"The idea of creating a crystal with dimensions higher than that of conventional 3D crystals is an important conceptual breakthrough in physics, and it is very exciting for us to be the first to devise a way to realize a space-time crystal," Berkeley Lab physicist Tongcang Li, a member of the research group, said according to Live Science.

The proposed 4D space-time crystal, which would be similar to 3D crystals, would have a periodic structure in time and space.

"The electric field of the ion trap holds charged particles in place and Coulomb repulsion causes them to spontaneously form a spatial ring crystal," said Xiang Zhang, a faculty scientist, according to Product Design and Development.

"Under the application of a weak static magnetic field, this ring-shaped ion crystal will begin a rotation that will never stop. The persistent rotation of trapped ions produces temporal order, leading to the formation of a space-time crystal at the lowest quantum energy state," added Zhang.

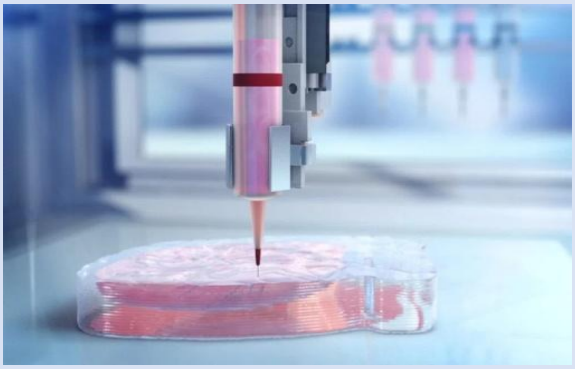
S. Samyuktha
3rd year, EEE

Preethi
3rd year, EEE

MAN MADE IN MINUTES

Bioprinting allows scientists to artificially create organs that can be used to repair damaged tissue, replace organs and even perform drug and other medical tests. The process takes place just like 3D printing where the object is built layer by layer over a period of long time. The process can take days and cannot make objects with free form shapes.

According a new research published in the *Advanced Materials*, researchers have come up with a new optical technique that in a few seconds can create complex tissue structures. The research was published by researchers at EPFL and University Medical Centre Utrecht that has made printing complex living tissue very easy. The technique is called Volumetric Bioprinting which creates tissues by using a laser to shape the stem cell which solidifies on encountering the laser. The stem cells are suspended in hydrogel contained within a spinning tube that rotates according to the shape desired. The process is completed by adding endothelial cells which vascularize the tissue.



The technique can create tissues several inches long and scientist have already created a valve like a heart

valve, a meniscus and a complex-shaped part of the femur. The process involved in creating these projects are described by the researchers on a post on the EPLF website. The technique can also print interlocking structures very easily.

The researchers believe that the technique is appropriate for mass fabrication and can easily create personalized implants. The technique can also create wide range of cellular tissue models which can be acceptably long. It will also be useful in drug testing as it will effectively eliminate the use of animals.

RESOURCE:https://in.mashable.com/science/6216/researchers-have-found-a-way-to-print-complex-living-tissue-in-a-matter-of-minutes

SHALINI . A

CSE-B

BRAIN PORT

Everybody deserves to see the world. A new device that could make the blind people gain their vision has been developed by scientists. This device is known as Brainport Vision Device or the Electric Lollipop.

The device is manufactured by Wicab Inc., a biomedical engineering company in Middleton, Wisconsin, United States. It relies on sensory substitution, in which if one sense is damaged, the part of the brain that would normally control that sense can learn to perform another function other than the normal use of tongue for tasting the food, talking there are also so many other users. One of them is for sensing of light. This is the property used in Brainport Device. Other parts of the body, such as the back, were not sufficiently sensitive. The fingertips were sensitive enough but people wanted the full use of their hands.

This device consists of a tiny external camera and then the images are converted into a pattern of electronic impulses and send them to the electrode

array placed on top of the tongue. The impulses are then sent to the different sensory centers of the brain for interpretation through an electrode array placed on the tongue. This works in the similar fashion of tasting a toffee.

The Brainport technology could totally change the interaction for the blind people with others. It may help in their personal growth and make them feel that they are not blind anymore.

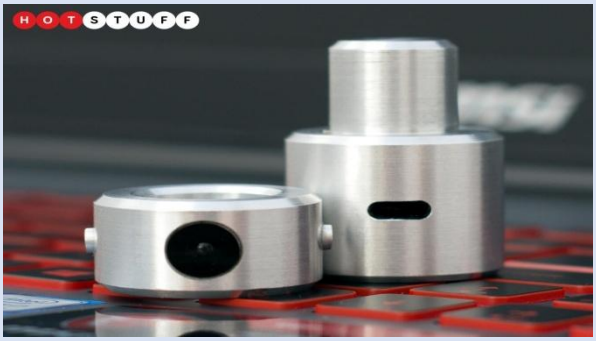
Reference: www.krazytech.com

G. Harini

1st year, CSE

INSTA RING

We all are lazy at some point in our lives to hold our mobiles or camera's to click pictures. From now on you don't have to constantly reach for the camera or smartphone for capturing our memories because from now on you have the camera on your finger.So this insta ring is a tiny wearable camera which is super light, super handy and incredibly fast. This tiny camera has some of the most sophisticated technology.



It has 128GB flash storage memory and it's always ready for action.This insta ring can shoot 4K video at 30fps or 12-megapixel, HDR photos, which is quite a feat for a camera that wraps around your forefinger.It has a sapphire glass on the camera and aerospace grade aluminum on minimalistic and elegant body design defines insta ring as a premium.This camera is available in 24 sizes and 12 colours including black , white , red and blue. It has a wirless charger and it is also resistant of dust & water so you can dive up to 50 meters- even in salt water. So wearable camera is compatible with the Android and iOS operating systems. It can also beep via the smartphone app if it slips off and falls down . This tiny camera can be

easily operated all we need to do is just press or hold one of the two side buttons in order to capture a moment.

Reference: www.gadgetsnow.com

S.Himaja

2nd year, ECE

VIRTUAL REALITY ROLE IN EMPLOYEE SAFETY

The Human Factors Research Group at the University of Nottingham, developed an immersive VR system to stimulate participants' perception of temperature, and senses of smell, sight and hearing to explore how they behaved during two health and safety training scenarios: an emergency evacuation in the event of a fire and a fuel leak.

In one scenario, participants had to evacuate from a virtual fire in an office, seeing and hearing using a VR headset but could also feel heat from three 2kW heaters, and could smell smoke from a scent diffuser, creating a multisensory virtual environment. This group was compared against another group who were observed in this scenario using only audio-visual elements of VR.

Applications to the work place

"Technology is continuously advancing and in many cases becoming more affordable, so this study gives us a taste of what's to come. By improving training strategies with the use of technology and stimulated sensory experiences, we are heading in a direction where the workforce will not just enjoy a more immersive and interesting training course but participate in an effective learning experience, so they are better prepared and equipped to stay safe, healthy and well at work."

The researchers conducted meetings, discussions, and visits with partners including Rolls-Royce, for expert advice around fire safety and safe handling of hazardous chemicals.

Reference:

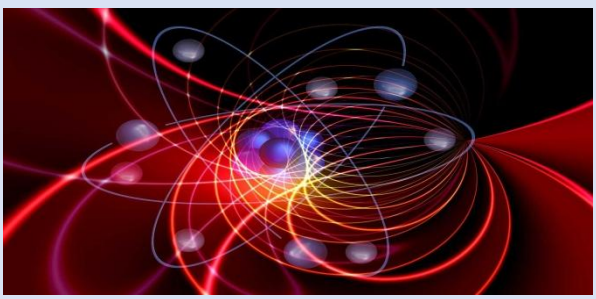
www.sciencedaily.com

Aishwarya. A

3rd year, EEE

NOVEL TOOL TO PROBE FUNDAMENTAL MATTER

Besides gases, liquids and solids, matter can exist in other forms when it is subjected to extreme conditions. Such situations were encountered in the Universe right after the Big Bang, and they can also be mimicked in the laboratory.



Published in Nature Physics, their work reports on the experimental realization of a "lattice gauge theory," a theoretical model initially proposed by Kenneth Wilson -- Nobel Prize in Physics 1982 -- to describe the interactions between elementary particles such as quarks and gluons. The authors demonstrate that their experimental setup, an ultracold gas of atoms manipulated by lasers, indeed reproduces the characteristics of such an appealing model. The challenge consisted in implementing well-defined interactions between "matter" particles and "gauge bosons," which are the mediators of fundamental forces. In the cold-atom context, these different types of particles are represented by different atomic states, which can be addressed in a very fine manner using lasers.

Reference:

www.sciencedaily.com

K. Deepika

3rd year, IT

AWARDS AND ACHIEVEMENTS

Contact Us:

BVRIT Hyderabad College of Engineering for Women

Plot No.8-5/4,Rajiv Gandhi Nagar Colony,

Nizampet Road, Bachupally

Hyderabad-500090

Phone:040-4241-7773

Email: info@bvrithyderabad.edu.in, principal@bvrithyderabad.edu.in

Technical Magazine: newsletter@bvrithyderabad.edu.in