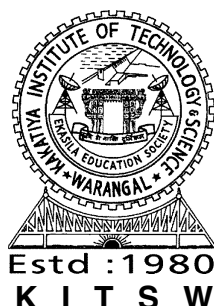# KAKATIYA INSTITUTE OF TECHNOLOGY AND SCIENCE

(An Autonomous Institute under Kakatiya University, Warangal)
WARANGAL - 506 015, TELANGANA, INDIA.

Estd :1980
K I T S W

ELECTROMANIA'17

...A Technical Magazine

Volume - VII

December - 2017

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Vision of the Department

❖ Develop the department into a full-fledged center of learning in various fields of Electronic and Communication Engineering in pursuit of excellence in Education, Research, Entrepreneurship and Technological services to the society.

Mission of the Department

❖ Imparting quality education to develop innovative and entrepreneurial professionals fit for the globally competitive environment.

❖ To nurture the students in the field of Electronics and Communication Engineering with an overall background suitable for attaining a successful career in Higher Education, Research and Industry.

Program Educational Objectives (PEOs) of the Department

The PEO's of the B.Tech (Electronics & Communication Engineering) programme are focused on making our graduates technologically superior and ethically strong.

PEO-I: Building on fundamental knowledge, graduate should continue develop technical skills within and across disciplines in Electronics and Communication Engineering for productive and successful career maintaining professional ethics.

PEO-II: Graduates should develop and exercise their capabilities to demonstrate their creativity in engineering practice and team work with increasing responsibility and leadership.

PEO-III: Graduates should refine their knowledge and skills to attain professional competence through life-long learning such as higher education, advanced degrees and professional activities.

Program Outcomes (POs) of the Department.

Engineering program must demonstrate that their students attain the following outcomes:

(a) An ability to apply knowledge of mathematics, science and engineering.

(b) An ability to design and conduct experiments, as well as to analyze and interpret data.

(c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

(d) An ability to function on multidisciplinary teams.

(e) An ability to identify, formulates, and solves engineering problems.

(f) An understanding of professional and ethical responsibility.

(g) An ability to communicate effectively.

(h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.

(i) A recognition of the need for and an ability to engage in life-long learning.

(j) A knowledge of contemporary issues.

(k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Program Specific Outcomes (PSOs) of the Department

(l) Readiness for immediate professional practice.

(m) An ability to use to fundamental knowledge to investigate new and emerging technologies leading to innovations.

EDITORIAL BOARD
! Wish you all a very happy & prosperous new year 2018 !

Chief Editor Message

It is heartening to note that ECE department of KITSW is regularly publishing the technical magazine "ELECTROMANIA" and its VII volume is just brought out. I congratulate them for such fine efforts. Such magazines should enhance the teaching learning process in the institute and offer latest technical knowledge in line with our vision and mission statements. The students and faculty must scan through the number of online journals that we are subscribing and bring out the quintessence of such information into the technical magazine. Only then, I believe the performance of our students would improve paving the way for quality research work which should be our main focus for the times to come.

And our efforts would continue…

-Dr. Y.Manohar
Director

Principal Message

Hearty congratulations to ECE department coordinators and students for collective effort in releasing technically informative "ELECTROMANIA-17" in this year. This improves the teaching-learning process which enhances the advances in technology and ultimately helps to reach the aim of joining in this institution. Put all your efforts sincerely for better performance that leads to good results in future life.

- Dr. P.Venkateswara Rao
Prinicipal

Editor In-charge Message

It has been our prime initiative to collaborate technical ideas and facts in the form of 'ELECTROMANIA-Technical Magazine'. In this view, with great pleasure we are bringing out the "ELECTROMANIA-17", which majorly comprises the Technical Know-hows, projects, inspirational ideas and article with updates in the latest trend. This magazine is enriched with a motto to provide technical excellence and guidance that leads to growth and success of the students. We look forward to bring many more such innovative things into the magazine in the years to come to enhance the student's knowledge for a rewarding career.

-Dr. G.Raghotham Reddy
Prof. & Head, Dept. of ECE

Faculty In-charge Message

Technical education should incorporate all elements that enable engineering graduates to become well suited for industry & research organizations, however equal emphasis must be focused on the practical and innovative need based research aspects of quality education. Keeping this in view "Electromania" is a small initiative by the department of ECE. We assure that this technical magazine inspires students with its content, which comprises of the latest technological trends, ideas and facts with the innovative projects. We can confidently, say that this magazine will give the required impetus to research culture & career booster to the students.

- Smt. A.Vijaya, *Assoc. Prof*
- Sri Koustubh Kulkarni, *Asst. Prof*

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CONTENTS

WHAT TO LEARN

LABVIEW

Laboratory Virtual Instrument Engineering Workbench (Lab VIEW) is a system-design platform and development environment for a visual programming language from National Instruments. The graphical language is named "G"; not to be confused with G-code. Originally released for the Apple Macintosh in 1986, LabVIEW is commonly used for data acquisition, instrument control, and industrial automation on a variety of operating systems (OSs), including Microsoft Windows, various versions of Unix, Linux, and macOS. The latest versions of LabVIEW are LabVIEW 2017 and LabVIEW NXG 1.0, released in May 2017.

LABVIEW-BENEFITS
- o Interfacing to devices
- o Code compiling
- o Large libraries
- o Parallel programming
- o Ecosystem
- o User community
- o Home Bundle Edition

KEIL

Keil development tools offer a complete development environment for ARM, Cortex-M, and Cortex-R processor-based devices. They are easy to learn and use, yet powerful enough for the most demanding embedded applications. The MDK Core contains all development tools including IDE, Compiler, and Debugger.

GREEN COMMUNICATION AND NETWORKING

The worldwide growing energy demands together with the increasing depletion of fossil fuels have been recognized as a major challenge that needs to be urgently addressed by society in order to have a sustainable future. To investigate new technologies that can enable a transition towards a more sustainable society with a reduced carbon footprint is of prime importance. It is well understood that ICT is one of the keys to a future low-carbon and sustainable society.


Communications technologies will be critical for achieving large-scale energy savings in all domains including communications, manufacturing, transportation, buildings, and electricity generation and distribution. In this context, there is a critical need for new ways of reducing energy consumption of communication and networking systems if the current trajectory of traffic growth and supporting anywhere / anytime / anything access is to continue unabated. Energy costs are significant in a broad range of communications networks ranging from data center networks (where network equipment consume about 15 % of the overall energy used) to cellular networks (where energy use of base stations amounts to around 70 % of the total). The need for 'greener' communications and networking technologies has been recognized by the research community as demonstrated by the significant research efforts in this area during the last years. However, many challenges still remain to be addressed.

EMBEDEDED C

Embedded C is a set of language extensions for the C programming language by the C Standards Committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations. In 2008, the C Standards Committee extended the C language to address these issues by providing a common standard for all implementations to adhere to. It includes a number of features not available in normal C, such as, fixed-point arithmetic, named address spaces, and basic I/O hardware addressing.

Embedded C uses most of the syntax and semantics of standard C, e.g., main() function, variable definition, datatype declaration, conditional statements (if, switch case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.
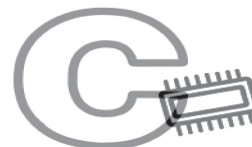
ARDUINO

Arduino is an open source computer hardware and software company that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution. Arduino boards are available commercially in preassembled form, or as do-it-yourself (DIY) kits.
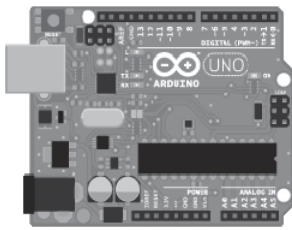
Arduino board designs use a variety of microprocessors and microcontrollers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler tool chains, the Arduino project provides an Integrated Development Environment (IDE) based on the processing language project.

VoIP

VoIP stands for Voice over Internet Protocol. It is also referred to as IP Telephony, Internet Telephony and Internet Calling.

It is an alternative way of making phone calls that can be very cheap or completely free. The 'phone' part is not always present anymore, as you can communicate without a telephone set. VoIP has been named as the most successful technology of the last decade.

VoIP has a lot of advantages over the traditional phone system. The main reason for which people are so massively turning to VoIP technology is the fact of cost-effectiveness. In businesses, VoIP is a way to cut down communication cost, add more features to communication and interaction between employees and with customers so that to render the system more efficient and of better quality. For individuals, VoIP is not only the things that have revolutionized voice calling worldwide, but it is also a means to have fun communicating through computers and mobile devices for free. One of the pioneering services that made VoIP so popular is Skype. It has allowed people to share instant messages and make voice and video calls for free worldwide.

VoIP is said to be cheap, but most people use it for free. Yes, if you have a computer with a microphone and speakers, and a good Internet connection, you can communicate using VoIP for free. This can also be possible with your mobile and home phone. There are many ways of using VoIP technology. It all depends on where and how you will be making the calls. It could be at home, at work, in your corporate network, during a travel and even on the beach. The way you make calls varies with the VoIP service you use.

WHAT'S TRENDING NOW

5G - TECHNOLOGY

5G technology refers to the short name of fifth Generation which was started from late 2010s. Complete wireless communication with almost no limitations. It is highly supportable to WWWW (Wireless World Wide Web). Benefits of 5G Technology are: 1) High Speed, 2) High Capacity, 3) Huge Data Broadcasting capability, 4) More Clarity as of HD quality, 5) Large Phone Memory & Greater Dialing Speed, 6) Less Traffic.

5G technology also supports: 1) Multimedia Newspapers, 2) Interactive Multimedia, 3) Voice Over Internet.


5G offers a high resolution for crazy phone users and bi-directional bandwidth shaping. Wireless applications are those in which we use free space as the transmission medium & do not involve cabling of fiber or copper cables. The best way in which 5G can help the users is in terms of its safety and security features.

Widespread applications of 5G technology are in global networks, wearable devices with AI (artificial intelligence) capabilities, Radio resource management, VoIP enabled devices.

Gi-Fi TECHNOLOGY

Gi-Fi means Gigabit Fidelity that allows wireless transfer of audio and video with the data-rate up to 5 Gbps (gigabits per second). It is 10 times faster than current maximum transfer rate within 10 meters range. The reason for pushing Gi-Fi technology is 1) High speed 2) Low cost 3) Small size 4) Low power consumption (<2 mV), when compared to earlier used networking systems i.e., Wi-Fi or Bluetooth.
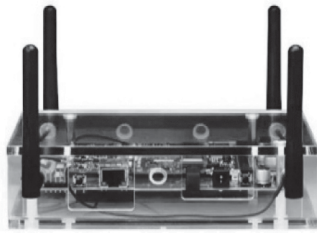
The core component of Gi-Fi is the subscriber station. Small antenna at the subscriber station which is mounted on the roof which supports Line of Sight (LoS) operation. It uses time division duplex (TDD) for both transmission and reception. 1) Conversion of data from IF range to RF 60 GHz range. 2) The incoming RF signal is first down converted to an IF signal, centered at 5GHz and then to converted to as normal data. 3) Heterodyne principle is used to avoid leakages. 4) Finally, the data is transferred.


Within 5-6 years, we can expect Gi-Fi to be the dominant technology for wireless networking. By that time it will be high broadband access, which will develop high speed wireless home and office of the future. Gi-Fi potentially can bring wireless broadband to the enterprise in an entirely new way.

Li-Fi TECHNOLOGY

Light Fidelity or Li-Fi is a Visible Light Communication (VLC) system running wireless communications travelling at very high speeds. Li-Fi uses common household LED (Light Emitting Diode) light bulbs to enable data transfer, boasting speeds of up to 224 Gbps (gigabits per second). It

is wired and UV visible-light communication or infrared and near- ultraviolet instead of radio-frequency spectrum, which is a part of optical wireless communications technology, which carries much more information and has been proposed as a solution to the RF-bandwidth limitations

Subsequently, in 2012 after four years of research, Harald Haas set up a company called 'Pure Li-Fi' with the aim to be the world leader in 'Visible Light Communication technology'. Li-Fi and Wi-Fi are quite similar as both transmit data electromagnetically. However, Wi-Fi uses radio waves while Li-Fi runs on visible light. As we now know, Li-Fi is a Visible Light Communication (VLC) system. This means that it accommodates a photo-detector to receive light signals and a signal processing element to convert the data into 'streamable' content.
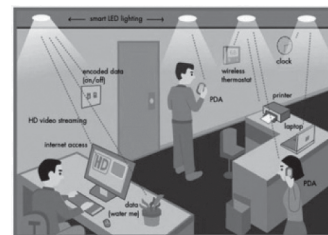
For example, data is fed into an LED light bulb (with signal processing technology), it then sends data (embedded in its beam) at rapid speeds to the photo-detector (photodiode). The tiny changes in the rapid dimming of LED bulbs is then converted by the 'receiver' into electrical signal. The signal is then converted back into a binary data stream that we would recognize as web, video and audio applications that run on internet enables devices.

OUTERNET LANTERN

The device Outernet "Lantern" (previously known as Pillar), is a device that can be used as a data receiver and media storage system, is being designed and developed by Outernet that will be a "completely self-contained, high-speed receiver" that is "solar-powered, weatherproof, and creates a wireless hotspot to allow Wi-Fi-enabled devices to access content." In some places, such as rural areas and remote regions, cell towers and Internet cables simply don't exist. The primary objective of Outernet is to bridge the global information divide. The purpose of the Lantern, as stated by Outernet, is to provide free access to the media archive, through Outernet, in high traffic public locations, such as schools.

Another way to access the transmissions sent by Outernet is to build a receiver, which requires certain components, including an L-band antenna, low-noise amplifier, and DVB-T dongle. The data received is stored on some sort of computing device, which then can be accessed when a Wi-Fi dongle is connected to the hotspot. Currently, this method only works with specific components when dealing with the USB satellite tuner and USB Wi-Fi dongles.

SPINTRONICS

Spintronics, a portmanteau word meaning "spin transport electronics", is the use of a fundamental property of particles known as "electron spin" for information processing. Electron spin can be detected as a magnetic field with one of two orientations: up and down. This provides an additional two binary states to the conventional low and high logic values, which are represented by simple currents. Carrying information in both the charge and spin of an electron potentially offers devices with a greater diversity of functionality.
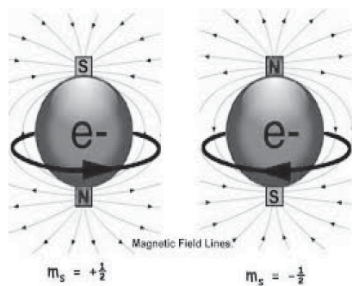
So far, Spintronics technology has been tested in information-storage devices, such as hard drives and spin-based transistors. Spintronics technology also shows promise for digital electronics in general.
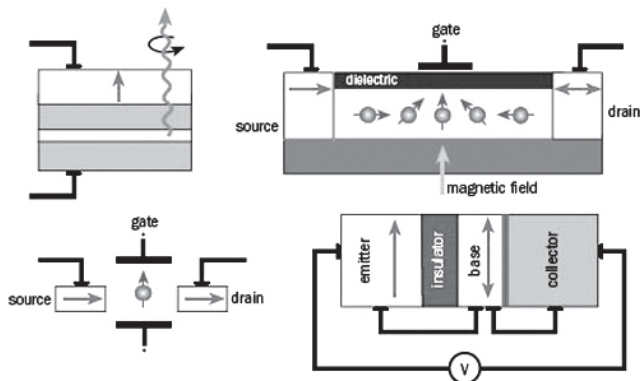

The ability to manipulate four, rather than only two, defined logic states may result in greater information processing power, higher data transfer speed and higher information-storage capacity. It is expected that spin transport electronic devices will be smaller, more versatile and more robust compared with the silicon counter parts.

WHAT WILL BE NEXT
'5G'- INTERNET NETWORK

Following the ongoing trend of innovation of evolution in the mobile industry, 5G is the next logical step. But 5G will be a lot more than a faster air interface; it will be the answer to network congestion, with energy efficient, reliable, cost-effective connection to billions of people and devices all over the world.
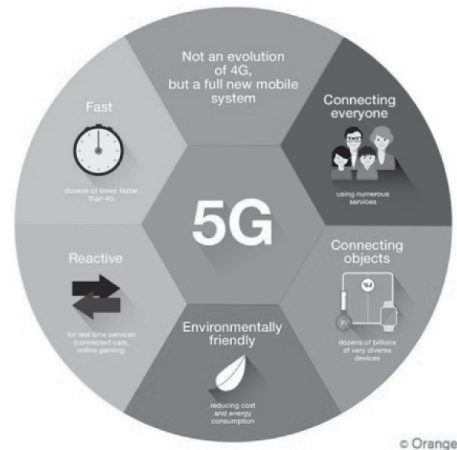
By 2020, the number will drastically increase, and the need for a faster, safer, cost and energy efficient network. Gartner forecasts that the number of networked devices will soar from approximately 5 billion in 2015 to 25 billion by 2020. Therefore, 2015 is high time to begin experimenting with 5G. We hope that ITU World Radio includes an in-depth discussion on 5G's spectrum.

'FIBER EVERYWHERE'- FOR IMPROVED CONNECTIVITY

If you look back in 2014, you will see there have been some major efforts to perk up the connectivity and meet the demand arising from an increased usage of HD video, 3G/ 4G streaming and many other broadband services. But this increased demand also shed light on the weaknesses of the existing infrastructure of communication technology. It has led to more research activity in fiber technology.

In the next five years, we will see more activities in fiber with the ever growing usage of web-based services, Internet of Things (IoT) and an insatiable demand for increased data speed.

'BIG DATA' - PLAYING BIGGER ROLE

Today, big data is one of the biggest things in the world of business. With an increased number of embedded devices, mobile users, businesses, contextual information, location information and network protocols, it is possible to generate 20 billion records a day that amounts to 1TB of information daily. And the data volume will only go up from here.

By processing and analyzing this colossal data with superior analytics, it is possible to understand a scenario, interpret events, predict a trend and decide the course of action. When used right, big data can yield bigger benefits and improved efficiency in terms of cost, power, and resources. With more businesses realizing its efficacy, big data is sure to transform communication systems into a smart, insightful network.

'CYBER SECURITY' - UP FOR ANY CHALLENGE

The recent past has given us a very important lesson - every connected device can and will be hacked. We had a fair deal of hacking in the retail industry, financial industry as well as software companies. And that made us wonder - how safe is our data?

On the other hand, thanks to these hacks, by which now businesses are taking cyber security more seriously. Also, the general internet users have become aware of the threats and incorporating basic security tips during their internet sessions. As of today, phone number verification, one-time password and login verification are some effective tools in cyber-security.

The coming years will bring major changes in the cyber-security technologies in order to respond to recent (and unfortunately, future ones as well) cyber-attacks that have grown in numbers and also in terms of sophistication.

'SMARTPHONE, WEARABLE TECHS' - TAKING HIGHER LEAPS

Did you think smart phones cannot get any smarter? Think again. Every few days, we are getting updates about a new smartphone with improved features and a shrinking price tag. And the demand for these ubiquitous communication devices is soaring day by day. In the next five years, we are sure to see a wide range of cost-effective smart phones with improved performance in the hands of everyone.

But that's not all. Beside smartphone, we will also see new and improved tablets, wearable technology and various connected sensors in the fields of medical, military and home automation to make lives better and safer. Mark Zuckerberg, CEO of Facebook Inc. organization recently said, the future of communication is 'Technology', and righty it is proving.

PERSONALITIES WHO MADE AN IMPACT

SHANTANU NARAYEN

Shantanu Narayen is the CEO of Adobe Systems. Prior to this post, he held the role as the President and Chief Operating Officer since 2005.

He is also the President of the board of the Adobe Foundation. He grew up in Hyderabad, India, the second son of a mother who taught American literature and a father who ran a Plastics company. He went to Hyderabad Public School in Hyderabad. Narayen holds a Bachelor of Science in electronics engineering from Osmania University in India, a Master of Business Administration from the University of California, Berkeley, and a Master of Science in computer science from Bowling Green State University in Bowling Green, Ohio. On May 7, 2011, Narayen received an honorary Doctor of Applied Science degree from his alma mater, Bowling Green State University.

Narayen started his computer graphics career at Apple before moving to Silicon Graphics to be its director of desktop collaboration products. He then left Silicon Graphics to co-found the pioneer of digital photo sharing over the internet, Pictra Inc. In 1998 Narayen started his 16-year career at Adobe, joining the company as vice president of worldwide product research.

He was later promoted to executive vice president before becoming chief operating officer of the company in 2005 at the age of 41. Narayen was one of the driving forces behind Adobe's $3.4bn acquisition of multi-media company Macromedia in 2005 before being appointed as the chief executive of Adobe in 2007.

Former USA President Barack Obama recognized Narayen in 2011 by appointing him as a member of the new Management Advisory Board, which was established by an Executive Order in 2010 to advise on how to implement the best technology practices within the government.

Dr. TESSY THOMAS

Dr. Tessy Thomas is an Indian scientist and Project Director for Agni-IV missile in Defence Research and Development Organization. She is the first woman scientist to head a missile project in India. She is known as the 'Missile Woman' of India. Tessy was born in April 1963 in Alappuzha, Kerala, to a small-businessman father and a homemaker mother. She has graduated in engineering from the Government Engineering College, Thrissur. She grew up near a rocket launching station and says her fascination with rockets and missiles began then. She also has an M.Tech degree in 'Guided Missile' from the Institute of Armament Technology, Pune (now known as the Defence Institute of Advanced Technology). Her parents from Kerala named her after Mother Teresa.

Tessy was associate project director of the 3,000 km range Agni-III missile project. She was the project director for mission Agni IV which was successfully tested in 2011. Tessy was appointed as the Project Director for 5,000 km range Agni-V in 2009 and the missile was successfully tested on 19 April 2012. In January 2012, Prime Minister Manmohan Singh told the Indian Science Congress that Mrs. Thomas is an example of a "woman making her mark in a traditionally male bastion and decisively breaking the glass ceiling". The media loves to call her Agniputri, or one born of fire, after the missiles she has helped to develop. "We are all proud of our country. Agni-V is one of our greatest achievements," she says.

She is married to Saroj Kumar, now a commander in the Indian Navy and they have a son Tejas, who is an Engineer in Ford Technologies. In a glowing tribute in 2008, The Indian Women Scientists' Association did not forget to mention that "like most women she also does a tight-rope walk between home and career, between being a mother and a scientist who is dedicated to her job. We feel Tessy Thomas serves as a role model and an inspiration for women scientists to achieve their dreams and have their feet planted in both worlds successfully," the group said.

Tessy Thomas was conferred the Lal Bahadur Shastri National Award for her outstanding contribution for making India self-reliant in the field of missile technology. Tessy Thomas was awarded D.Sc. by ITM University, Gwalior in 2016.

EESHA KHARE

Eesha Khare born in 1995, is an American student who worked to develop a unique concept of 'supercapacitor' prototype that may charge significantly faster and would last for more charging cycles. Khare, an 18-year-old graduate of Lynbrook High School in California was the runner up at Intel International Science and Engineering Fair held in Phoenix on 17 May 2013 where 1,600 other finalists from more than 70 countries participated.

On 13 June 2013, she was invited to speak on the talk show Conan. Khare's electro-chemical super-capacitor prototype could be fully charged within 20 to 30 seconds, and would hold charge longer than other similar devices. The technology could potentially be scalable to power cell phones or cars.

Khare's invention won $50,000 in prize money at the Intel Foundation Young Scientist Award competition held in Phoenix, Arizona. Afterwards, she got offers from giant companies like Google and others.

Specifically, under the supervision of Dr. Yat Li at the Department of Chemistry and Biochemistry, University of California, Santa Cruz, she designed, synthesized, and characterized a novel core-shell nano-rod electrode with hydrogenated TiO_2 (H-TiO_2) core and poly-aniline shell, fabricated into a flexible solid-state device. Her tests showed 238.5 Farads per gram, 20.1 Watt-hours per kilogram, 20540 Watts per kilogram, and only 32.5% capacitance loss over 10,000 no. of charging cycles.

CAREER PROSPECTS

INCUBATORS - A REVOLUTION

The SIDBI Innovation and Incubation Centre (SIIC) offers a whole gamut of incubation facilities and services to prospective 'entrepreneurs' and 'intrapreneurs' to convert their innovative ideas into commercially viable products. SIIC incubates ventures in technology, engineering and other interdisciplinary areas. The regular events like entrepreneurial talk series, workshops and seminars have offered SIIC a good interface and visibility in the region.

Since its inception in 2003, the centre has grown tremendously and has emerged as a prestigious incubator

in India (has won the National Award for Technology Business Incubators for the year 2011). From 2003 till date, SIIC has grown from one incubation centre representing IIT to seven centers representing various arms of Government as:

- SIDBI Innovation and Incubation Center (for SIDBI)
- Technology Business Incubator (for DST)
- MSME Incubator (for MSME)
- Technology Incubation & Development of Entrepreneurs (for MIT)
- Technology Entrepreneurship Promotion (for DSIR)
- BIO-Incubator (for DBT)
- MoLE Incubator.

SIIC can incubate on an average 33 companies. So far, it has incubated and mentored 53 companies of which 26 have already graduated.

The goal of the SIDBI Innovation and Incubation Center (SIIC) at IIT Kanpur is to promote technology based entrepreneurship and thereby facilitate practical application of knowledge for public use. SIIC, IITK wishes to facilitate the creation of ideas and inventions that benefit society. Towards this end, SIIC, IITK has adopted an Incubation Procedure to provide guidance and management structure for creating the entrepreneurship ecosystem.

Certain aspects of the procedure are subject to periodical review and amendments. It will be the responsibility of the companies admitted to SIIC to update themselves from time to time on amendments in the Incubation Procedure. IIT Kanpur reserves the rights to make an exception of all or any of the terms of the policy for a particular company or a promoter on a case to case basis.

START-UPS

A startup company (startup or start-up) is an entrepreneurial venture which is typically a newly emerged, fast-growing business that aims to meet a marketplace need by developing a altogether viable business model that reflects an innovative product, service, process or a platform. A startup is usually a company designed to effectively develop and validate a scalable business model.

Evolution

Startup companies can come in all forms and sizes. Typically, a startup will begin by building a first Minimum Viable Product (MVP), a prototype, to validate, assess and develop the new ideas or business concepts. In addition, startups founders do research to deepen their understanding of the ideas, technologies or business concepts and their

commercial potential. Business models for startups are generally found via a "bottom-up" or "top-down" approach. Startups have several options for funding. Venture capital firms and angel investors may help startup companies begin operations, exchanging seed money for an equity stake in the firm.

Business partnering

Startups usually need to form partnerships with other firms to enable their business model to operate. To become attractive to other business, startups need to align their internal features, such as management style and products with the market situation. Profile is set out to be more successful (in finding a business partner) in a market that does not have a dominant design (established standard). New startups should align themselves to one of the profiles when commercializing an invention to be able to find and be attractive to a business partner. By finding a business partner a startup will have greater chances to become successful.

Culture

Startup founders often have a more casual or offbeat attitude in their dress, office space and marketing, as compared to traditional corporations. Some startups do not use a strict command and control hierarchical structure, with executives, managers, supervisors and employees. This culture today has evolved to include larger companies aiming at acquiring the bright minds driving startups. The main goal behind all changes to the culture of the startup workplace, or a company hiring workers from a startup to do similar work is to make the people feel as comfortable in their new office as possible in order to optimize the work performance.

Startup investing

Startup investing is the action of making an investment in an early-stage company (the startup company). Beyond founders' own contributions, some startups raise additional investment at some or several stages of their growth. Not all startups trying to raise investments are successful in their fundraising. Prior to the advent of equity crowd funding, a form of online investing that has been legalized in several nations, startups did not advertise themselves to the general public.

Investing online

The first known 'Investment-based crowd funding platform' for startups was launched in Feb,2015. The idea of these platforms is to streamline the process and resolve the two main points that were taking place in the market. The first problem was for startups to be able to access capital and to decrease the amount of time that it takes to close a

round of financing. The second problem was intended to increase the amount of deal flow for the investor and to also centralize the process.

Startup advocates are also trying to build a community of tech startups in New York City with organizations like NY Tech Meet Up and Built in NYC. In the early 2000s, the patent assets of failed startup companies are being purchased by what are derogatorily known as patent trolls, who then take the patents from the companies and assert those patents against companies that might be infringing the technology covered by the patent.

T-HUB

'T-HUB' is a unique public / private partnership between the government of Telangana, all three of India's premier academic institutes (IIIT-H, ISB & NALSAR) and key private sector leaders. It stands at the intersection of the start-up, academic, corporate, research and government sectors. As an independent registered non-profit organization, T-Hub is at the intersection of the start-up community, government, corporate, academic, and research sectors. We endeavor to build a booming start-up ecosystem thriving on the tightly-knit, most vibrant entrepreneurial ecosystem in the country. Its goal is to build an ecosystem that not only caters to local entrepreneurs but also acts as a gateway for anyone who wants to start a tech company in India. As an independent registered non-profit organization, T-Hub is at the intersection of the start-up community, government, corporate, academic, and research sectors. Our endeavor is to build a booming start-up ecosystem thriving on the tightly-knit, most vibrant entrepreneurial ecosystem in the country.

CatalysT - A T-Hub Building

The first phase of T-Hub is housed in a 70,000 square foot building called 'CatalysT', making it the largest incubator in a single location in India entirely dedicated to entrepreneurship. The building will be used for co-working spaces, meetings, mentoring, networking sessions and conferences. T-Hub provides access to mentors, investors and academia under one roof.

T-Bridge

T-Hub has launched a new program 'T-Bridge' at Silicon Valley in USA that will connect Indian startups with global market opportunities, and help bring global startups to India. Hyderabad's T-Hub targets becoming one of the world's largest startup ecosystems Hyderabad has two landmarks that one simply has to see. One, of course, is the legendary Charminar. The other is the new-age dream startup destination called as 'T-Hub'.

Last week, T-Hub completed one year of operation, and the journey so far has been on the ascent. This unique public and private sector partnership between the government of Telangana and three premier academic institutes - IIIT-H, ISB, and Nalsar has so far proven to be more than just a physical space, having become one of the India's fastest-growing startup engines, catalyzing innovation, scale, and deal flow.

INNOVATIVE PROJECTS

ELECTRONIC EYE CONTROLLED SECURITY SYSTEM

The project is designed as a security system based on photo sensing arrangement. It uses a 14- stage ripple carry binary counter to sense the light intensity through LDR. The output drives a buzzer and a relay for necessary action. This concept is very useful to deter burglars from banks, malls, jeweler stores and also in homes. The system is based on an electronic eye: it is an LDR sensor, called light dependant resistor. When light falls on the sensor, its resistance drastically decreases which lead to triggering an alarm to alert the user. This system best suits in the application of providing security for cash boxes and lockers, which can be found in malls, jeweler shops, and banks. The circuit is placed inside the cash box or locker in such a way that, when the burglar opens the locker and uses a torch light to find the valuables, the light falls on the circuit which contains an electronic eye working on Light Dependent Resistor (LDR) and gives a signal to the ripple counter. This activates the alarm, and indicates a burglary attempt. Also a lamp is used to indicate the theft when the light falls on the LDR.

Further the project can be enhanced by using a GSM modem and a microcontroller. GSM modem can be interfaced to the microcontroller to send an SMS to the user in case of burglary.

BLOCK DIAGRAM:
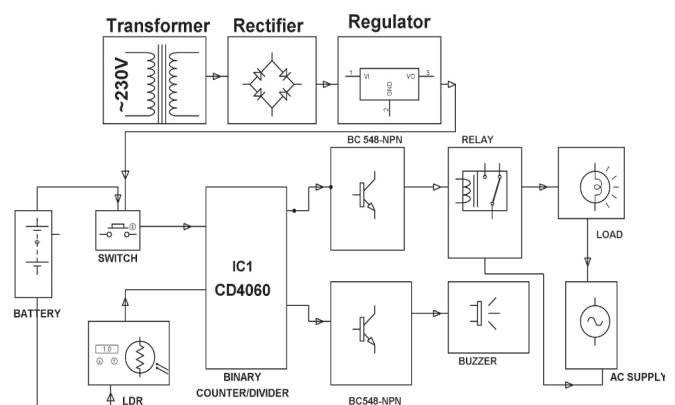
HARDWARE REQUIREMENTS:

Battery, Slide switch, LDR, Ripple Counter IC, Transistor, Buzzer, Relay, Bulb, Diode, Transformer, Capacitor, Resistor

IR CONTROLLED ROBOTIC VEHICLE

The project is designed to control a robotic vehicle using a standard TV remote. IR sensor is interfaced to the control unit on the robot for sensing the IR signals transmitted by the remote. This data is conveyed to the control unit which moves the robot as desired. An 8051 series microcontroller is used in this project as control device. Transmitting end uses a TV remote through which IR commands are transmitted. At the receiver end, these commands are used for controlling the robot in all directions such as forward, backward and left or right etc. At the receiving end the movement is achieved by two motors that are interfaced to the microcontroller. RC5 based coded data sent from the TV remote is received by an IR receiver interfaced to the microcontroller.

The program on the microcontroller refers to the RC5 code to generate respective output based on the input data to operate the motors through a motor driver IC. Further the project can be enhanced by DTMF technology. With this technology we can control the robotic vehicle by a cell phone. This technology has an advantage over long communication range as compared to line of sight communication in IR technology.
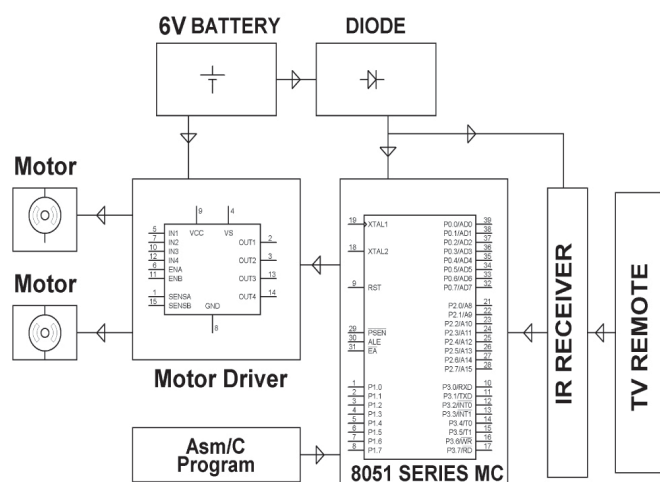
HARDWARE REQUIREMENTS:

8051 series Microcontroller, IR Sensors, DC motors, Motor Driver IC, Crystal, Resistors, Capacitors, Voltage Regulator, Battery, Robot Body.

SOFTWARE REQUIREMENTS:
KEIL compiler

Language: 'Embedded C' or 'Assembly Language'

BLOCK DIAGRAM:

CONS IN THE EDUCATIONAL SOCIETY

1. EDUCATION DISPARITY

Education is important. Few people would dispute this well-regarded fact. A good education (in comparison with a bad one) will provide a child with an increased chance of taking advantage of opportunities to be successful in life. Unfortunately, some people have it better than other. This is not an issue of just one school being better than another school. Rather we are talking about whole classes of American children being denied a proper education that will prepare them to compete in a job market with their peers and have the same access to the American Dream.

Disparity in educational quality is delineated by race and financial status. If you live in a poor neighborhood or are a minority, there is a good chance that the schools you attend are lacking many necessities. While Asians and Whites enjoy high graduating rates, Afro-Americans and Latinos continue to lag behind. Not surprisingly, because job opportunities are lessen for dropouts, these two groups have the highest incarceration rates.

2. SHIFTING ECONOMY

America used to sustain itself with making its own products through manufacturing and then turning around and selling those products. The economy is shifting to more of a service industry versus a manufacturing industry. In order to cut costs and keep product prices down companies are forced to outsource manufacturing to other countries. Other countries can produce products at much lower labor costs. Some companies have even begun to outsource call center jobs to keep labor costs down. Not only is, America now having lower paying service jobs than the average blue-collar job with a sustainable income but, our economy is too now a global economy.

For example, what happens in Japan or Iraq can drastically alter prices for our stock exchanges, gas/oil, and many other products. What exactly does this mean for our youth? The youth cannot graduate or even dropout of school without going through the pains of a low-income job. The jobs offered with no experience pay very little with very little room for pay increases. In fact, the competition to get a promotion can be fierce. In the past, your high school senior could graduate and go work at the local factory for the rest of his or her life and make a good living. They would not necessarily need to have a college education to survive. In fact, youth today will graduate from college with multiple degrees and still cannot find work that pays enough to sustain a decent lifestyle.

3. YOUTH UNEMPLOYMENT

Youth unemployment is a major problem in many countries. In the United States, youth employment has gone down in the past five years, but it is still at 11.1 percent, while the overall unemployment rate is just 5.5 percent. In Canada, the youth unemployment rate is 15.5 percent, while the national average is about half that. It's even worse in Europe, with almost a quarter of people between the ages of 18 and 24 unemployed. One way to stem this problem is for employers to offer young people a shortened workweek. Instead of a full-time job, they would start off at 80 percent of the workload and paycheck. This would create 10-20 percent more jobs in the market.

The reason to direct this initiative at young people instead of implementing it for everyone is a phenomenon called the endowment effect. It is the theory that people get attached to possession, money, and privilege, and once someone has those things, it's hard to take them away. But young people won't have that problem, because there is nothing to take away from them; they gain 80 percent of the job. A shortened workweek for a large segment of the workforce has also been suggested as a solution to aid the economy. A shorter workweek would theoretically lower a person's carbon footprint, improve employee morale, reduce unemployment, reduce the cost of child-care, and improve the economy.

TECHNOLOGY KNOW-HOWS

MEET THE WORLD's FIRST FIDGET SPINNER PHONE

Hong Kong based mobile technology company Chilli International Holding (HK) has launched what is touted as the world's first fidget spinner featured phone 'K188' in India.

Priced between Rs 1,200-Rs 1,300, the spinner mobile 'K188' is a compact gadget which also works as a Bluetooth device for smart-phones. Powered by a 280mAh battery, the phone comes with an expandable memory up to 8GB and offers multimedia options like images, video and music support along with Internet.

The company also launched the 'F05' feature phone which comes with A-GPS technology and is priced between Rs 1500 to Rs 1700. "Our focus for the quarter in on strengthening our brand at the Indian soil and with 'K188' and 'F05', we aim to deliver the industry's most value-for-price products," said Michael Feng, India Sales Head, Chilli International Holding (HK), in a statement. With a 6.1cm LCD display, 'F05' features a 1.3MP camera and dual-SIM support. Both the phones will be available both online and offline by the end of September 2018.

LG K7I WITH 'MOSQUITO AWAY' TECHNOLOGY LAUNCHED IN INDIA

LG in the end of 2016 launched a new K-Series smart-phone in India. The company has launched a brand new phone called - the LG K7i. The biggest highlight of this smart-phone is its 'Mosquito Away' technology. The LG K7i comes with an additional rear cover bundled in the box that can be placed on the phone when required - it features a speaker that produces ultrasonic frequencies said to drive mosquitoes away. The smart-phone is otherwise a budget offering, and runs Android Marshmallow. The LG K7i was launched at the side-lines of Day 1 of the India Mobile Congress, being held in New Delhi.

INNOVATIVE GADGET THAT ALLOWS YOU TO DRAW THE RAYS OF SUN

Italian designers from Milan created a wood engraver, which allows you to write and draw the rays of sun on wood, leather, plywood and other materials. A simple tool through the lens focuses the ray of sunshine to the selected object, burning it on a predetermined pattern by the author.

Febo - a wooden brush, which can be used to engrave their drawings on different surfaces. Gadget name - from the Greek name Apollona - Phoebus - who was a patron of the arts and the guardian of the sun.

Febo - is a simple tool that allows you to draw with the sun - the developers say. - It focuses the beams on the chosen canvas to create a unique individual design. Febo has been designed with the aim of turning nature into beautiful, creative and permanent works of art. Because of its simplicity, you can personalize your favorite things in a matter of minutes! Febo - it's fun for all ages, regardless of your skill.

Every engraver comes with a pair of twist the lens that can be adjusted on any size. They provide 100% UV protection, and visibility of the transmitted light is only 6-8%. However, before using Febo need to wear sunglasses. Then you apply the tool to a drawing, remove the protective filter and lens begins to absorb the sun's rays, focusing them on the canvas. The intensity of the engraving depends on the brightness of the sun.

SMART SHIRT

Smart shirt developed at Georgia tech which represents the first attempt at relying an unobtrusive, mobile and easy to use vital signs monitoring system, presents the key applications of the smart shirt technology along with its impact on the practice of medicine and covers key opportunities to create the next generation of truly "adaptive and responsive" medical systems. Research on the design and development of a smart shirt fort a combat casualty care has led to the realization of the world's first wearable motherboard or an "intelligent" garment for the 21st century. The Georgia Tech Wearable Motherboard (GTWM) uses optical fibers to detect bullet wounds and special sensors and interconnects to monitor the body vital signs during combat conditions. The principal advantage of smart shirt is that it provides for the first time a very systematic way of monitoring the vital signs of humans in an unobtrusive manner.

THE UMBRELLA THAT FORECASTS WEATHER

A piece of furniture that speaks to us that's the definition of Rose's vision for the future with enchanted objects.

The Ambient umbrella communicates with its owner through a series of patterned blue lights that indicate if the forecast calls for rain. Armed with your ZIP code, a wireless receiver at the handle of the umbrella connects to AccuWeather and then glows and pulses a gentle blue light if the weather looks frightful.

LATEST IN MOBILES

A transparent flexible screen is the latest invention that will help create bendable phones. A flexible screen allows a mobile phone to bend and stretch, making it more durable. Flexibility also allows for new input methods.

For example, you could flex the phone backwards or forwards to zoom in or out, to enlarge or reduce text size, and so forth.

A limitation with current mobile phones is that if you want a bigger screen display, you need to have a bigger phone. The bigger the phone - the less convenient it is to carry. But with flexible screen technology, mobile phones with large screen displays can be bent, folded or rolled-up into a compact size to fit any pocket. The idea of bendable phones has been around for awhile but the touch screens in use couldn't tell the difference between the touch of a finger, a stretch, or a bend.

SMART NOTE TAKER

The Smart Note Taker is such a helpful product that satisfies the needs of the people in today's technologic and fast life. With the help of Smart Note Taker, people will be able to write notes on the air, while being busy with their work. The written note will be stored on the memory chip of the pen, and will be able to read in digital medium after the job has done.

This will save time and facilitate life. There will be an additional feature of the product which will monitor the notes, which were taken before, on the application program used in the computer. If the application program is a paint related program, then the most similar shape will be chosen by the program and then will be printed on the screen. Since, JAVA Applet is suitable for both the drawings and strings, all these applications can be put together by developing a single JAVA program.

NANO HUMMINGBIRD
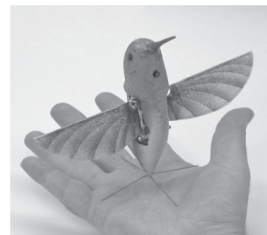
Nanotechnology has created some cool inventions and this 'nano-robot' is one of them. It was recently recognized by Time Magazine as one of the best inventions of 2011. These types of robots are often funded as military robots for unmanned aerial vehicle research. The Nano Hummingbird was developed for the Nano Air Vehicle Program of the Defense Advanced Research Projects Agency (DARPA). The objective of this project was to model the flight characteristics of a hummingbird because of its precision flying and hovering capabilities.

It has a 6.5 inch (16.5 cm) wingspan, a flight speed of 11 mph (18 km/h) and a flight time of about 20 minutes.

The propulsion and control systems are embedded in the wings. It also carries a battery, transmitter and a color video camera. Amazingly, the whole thing weights less than an AA battery (19.5 grams).

AN EYE-OPENER FACT

WHY ARE MANY STUDENTS SAILING THEIR BOAT TOWARDS SOFTWARE ?

This question is lurking in my mind as soon as started my B.Tech life. Is software the ultimate and only solution? I witnessed a large number of students who crave for IT sector jobs even though they have better core stuff. The sole reason is mega bucks! Yes, many people think of their financial status rather than their interest. It's a weak human psyche that one doesn't leave the work if he gets more than what he needs.

In a nutshell, to explain, many software companies will land on the top engineering institutes in metro-cities to tap the untapped and hidden talents of young minds for hiring the individuals who best suit their company.

By this the institutes and colleges in the semi-urban and rural areas are majorly left behind where the students come from village background

with lack of competitive skills.

Urban students are getting ample amount of employment opportunities in this way. So, they go on creating a way to crack the IT sector jobs rather than trying for the core jobs which is affecting the scope. One doesn't even have the idea or probability of getting lucrative jobs in the core sector.

It is only one side of the coin, if we toss the flip side, many students prefer jobs rather than aiming for higher studies due to lack of motivation or support or may be the deficiency of core-sector job opportunities in our country. This is the key reason which is dragging many students to settle and satisfy with their jobs. There are only a few institutes, especially in India which provide impeccable facilities to the students pursuing M.Tech to do research in R&D organizations and other core companies. The only thing is that they are limited to the highly intellectuals due to less seats or scope.

The hopes of the students are shattered to the ground because of this reason. The idea of starting small, privately owned business entrepreneurships in relative sector of their domain to promote and develop software or hardware essential backend is also doable, as those having average grades yet financially strong can also strive for Small/Medium-sized Enterprises (SMEs).

There are also many personal and impersonal factors for the individuals to decide on what good and what not. A student who is not able to decide, can take counseling and career guidance through seniors or field experts so as to at-least make him/her to think in more positive way rather than degrading in their opting. It solely depends on the interest and determination of an individual who weighs the pros and cons for shaping their misbalancing career into a well-settled life.

Last but not the least, don't ever forget that state of education or employment can be only improved or developed for a self cause or a nation's progress only when, we bring a change in ourselves by becoming knowledge-efficient and technology-par with the generation, which conforms solely in the hands and minds of the Youth of a nation !