KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE:WARANGAL
(Accredited by NAAC with 'A' Grade)
(An Autonomous Institute under Kakatiya University)

Department of Electronics and Communication Engineering

Electromania

A Technical Magazine

VOLUME 10
ACADEMIC YEAR 2020-21

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Vision of the Department

• Develop the department into a full-pledged 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 back-ground 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 and Communication Engineering) program 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 lifelong 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:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of the Department

PSO1: Readiness for immediate professional practice.

PSO2: An ability to use fundamental knowledge to investigate new and emerging technologies leading to innovations.

EDITORIAL BOARD

Principal Message

I express my happiness that the Department of Electronics & Communication Engineering for bringing out ELECTROMANIA, a Technical Magazine of the department. It is a great initiative and I feel that such a technical magazine is very well required as it helps in updating the knowledge of future engineers.

I hope this MAGAZINE will be well received by student community and faculty.

- Dr. K. Ashoka Reddy
Principal

Faculty In-Charge Message

We are very happy that the Department of Electronics & Communication Engineering is releasing a technical magazine "ELECTROMANIA" volume-X.

This magazine will definitely pave way to understand the latest trends of electronics and its applications in industrial and scientific sphere. The student fraternity can enhance their technical skills by the exchange of their views on latest trends taking place in the electronics and communication field.

We would also like to thank student members for their ingenious work.

- Dr. M. Chandrashekar, Asst. Prof.
- **Sri G. Kranthi Kumar,** Asst. Prof.

Editor In-Charge Message

I congratulate the Faculty Editorial Board and student members for their wonderful efforts in bringing up the "ELECTROMANIA" volume – X. The research articles published by faculty and students in different areas will helpful the student community to update themselves on latest research. The department of ECE revised the syllabus and incorporated subjects related to industrial 4.O on advanced technologies. Hope this will help students to exposure on advanced technologies, and enhance the opportunities to work/research in core areas. Department of ECE established 4 new labs: Embedded Systems and Applications, IoT, and Advanced DSP processors, Artificial Intelligence and Machine Learning with the support of Management and Principal. This Magazine is a mirror reflecting the creativity of young minds of the institution. I hope that such endeavor would continue in future as well.

- **Dr. B. Rama Devi**
Prof. & Head, Dept. of ECE

Board Members

Editor's In-charge
Prof. K. Ashoka Reddy, Principal
Dr. B. Rama Devi, Prof. & Head, Dept.of ECE

Faculty Editorial Board
Dr. M. Chandrashekar, Asst. Prof.
Sri G. Kranthi Kumar, Asst. Prof.

Student Members

K. Sriteja (IV ECE-I)

Deekshitha (IV ECE-II)

V.V.S.S. Deekshitha (IV ECE-III)

Uday Kiran Ray (III ECE-I)

G. Sravan (III ECE-II)

L. Shashi Preetham (III ECE-III)

S. Shreya (II ECE-I)

G. Meghana (II ECE-II)

B. Akhila (II ECE-III)

Dhaniya (II ECI)

CONTENTS

WHAT TO LEARN

PERL

Perl(is not officially an acronym but few people used it as Practical Extraction and Report Language) is a general-purpose programming language originally developed for text manipulation and now used for a wide range of tasks including system administration, web development, network programming, GUI development etc. The language expanded rapidly over the next few years, the Perl version number was bumped to 5 and continued to Perl 7 which was announced as a successor to Perl 5 getting important security and bug fixes. The Perl scripting language is the chip designer's best friend in meeting milestone targets. Flexibility in syntax checking allows the chip designer to write hassle free code.

Perl is extensively used in the Digital VLSI industry. It's used across multiple verticals - Design, Design Verification, Automation, CAD, Tools, etc. It facilitates easy creation of multiple applications using large number of inbuilt modules. Perl is also heavily used in automating testing and build system for embedded applications too. More over Perl scripting assists in organising data without disturbing the raw data when a circuit is designed.

ALTIUM DESIGNER

Altium Designer software comes with high-powered tools for performing various circuit design activities, such as Schematic, circuit circulation, PCB design. Altium Designer is one of the most popular of the high end PCB

design software packages on the market today. It is developed and marketed by Altium Limited. Including a schematic, PCB module, and an auto-router and differential pair routing features, it supports track length tuning and 3D modelling.

Altium Designer includes tools for all circuit design tasks: from schematic and HDL design capture, circuit simulation, signal integrity analysis, PCB design, and FPGA-based embedded system design and development. In addition, the Altium Designer environment can be customized to meet a wide variety of users' requirements. The circuit diagrams you build in Altium Designer are unique in that you have instant access to components, a powerful simulator, and control over your design rules. These features are built into Altium Designer's unified design environment. Altium Designer aids in quickly creating and evaluating schematics with the set of rules and constraints that you want for your design.

INTELLIGENT PROCESS AUTOMATION

Intelligent Process Automation (IPA) is the collection of technologies that come together to manage, automate and integrate digital processes. The primary technologies that make up IPA include Digital Process Automation (DPA), Robotic Process Automation (RPA) and Artificial Intelligence (AI). IPA is designed to assist human workers by taking over repetitive, routine and manual tasks. With IPA employed, software robots can interpret text communications, make decisions that don't require pre-programming, offer suggestions to clients and provide real-time tracking and

visibility into the workflow between systems and human agents.

Traditional levers of rule-based automation are augmented with decision-making capabilities thanks to advances in deep learning and cognitive technology. The promise of IPA is radically enhanced efficiency, increased worker performance, reduction of operational risks, and improved response times and customer journey experiences.

CRYPTOGRAPHY

Cryptography is the science of communications information securely from one source to another. It is used for authentication and encryption like bank cards, wireless telephone, e-commerce etc. Access control like car lock programs; payment like e-phone cash and may become the most valuable thing for democracy of e-voting system. Cryptography is used to secure all transmitted information in our IOT connected world, to authenticate people and devices to other devices. There are three types of cryptography they are secret key, public key, hash key.

Cryptographic techniques include encryption which used a procedure called algorithm to plain text to turn in it into something that will appear to be a different language or signs to the others who doesn't have the key to decrypt. It is the process of transferring sender's message to a secret format called gopher text that only intended receives will get understand the meaning of the secret message. It also helps to provide the way of making secure message to a confidential message transfer. Most of the applications of cryptography includes the e-commerce chip based payment digital currency and current passwords. Many companies now a days are using this cryptography because it has a standard encryption and key management so that they can be authenticated easily.

PROLOG

Prolog(programming in logic) is a logic programming language. It has important role in artificial intelligence. Unlike many other programming languages, Prolog is intended primarily as a declarative programming language. In prolog, logic is expressed as relations (called as Facts and Rules). Core heart of prolog lies at the logic being applied. Formulation or Computation is carried out by running a query over these relations. In artificial intelligence applications, prolog is used.

The artificial intelligence applications can be automated reasoning systems, natural language interfaces, and expert systems. The expert system consists of an interface engine and a database of facts. The prolog's run time system provides the service of an interface engine. Prolog program consists of declaration of the facts of the relations involved, declaration of rules concerning relations and formulations of questions to be answered.

WHAT'S TRENDING NOW

A RYZEN Powered Handheld Gaming PC

Although the Aya Neo looks like a Nintendo Switch by design, it's a bit more of a powerhouse packing a 7nm AMD Ryzen 5 4500U processor, Radeon Vega 6 GPU, and 16GB of RAM – four times that of the console. It even has a slightly bigger 7-inch touchscreen display at 800p resolution and runs Windows 10, so there are no pesky compatibility issues.

Apart from the hardware, the Aya Neo also has three USB-C ports for connecting accessories and a 3.5mm headphone jack as well. The device also has a WiFi 6 which means you can download digital games from Steam, Epic Games Store and other sources at faster speeds. The device also supports Bluetooth 5.0 connectivity for accessories and peripherals like wireless headphones. It's got everything we would like to see in the next Nintendo Switch Pro.

Flexible generators
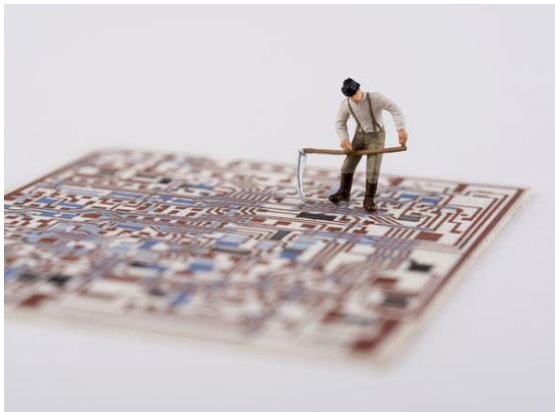
In one project funded by the Air Force Office of Scientific Research, the team has developed a radial TEG that can be wrapped around any hot water pipe to generate electricity from waste heat. Such generators could be used to power light sources or wireless sensor networks that monitor environmental or physical conditions, including temperature and air quality.

"Thermoelectrics are still limited to niche applications, but they could displace batteries in some situations," Yee said. "And the great thing about polymers, we can literally paint or spray material that will generate electricity."

This opens opportunities in wearable devices, including clothing or jewellery that could act as a personal thermostat and send a hot or cold pulse to your body. Granted, this can be done now with inorganic thermo electrics, but this technology results in bulky ceramic shapes, Yee said. "Plastics and polymers would enable more comfortable, stylish options."

Although not suitable for grid-scale application, such devices could provide significant savings, he added.

11th Gen Intel Core

The 11th gen intel core S-series desktop processor reaches speed up to 5.3 GHz. Engineered on the new Cypress Cove architecture, 11th Gen Intel Core S-series desktop processors are designed to transform hardware and software efficiency and increase raw gaming performance. The new architecture brings up to 19% gen-over-gen instructions per cycle (IPC) improvement[2] for the highest frequency cores and adds Intel® UHD graphics featuring the Intel graphics architecture for rich media and intelligent graphics capabilities.

11th Generation Intel® Core™ Processors bring enthusiast-level gaming performance to thin, ultraportable laptops, with up to 5GHz, 20 PCIe 4.0 lanes for the latest discrete graphics, Intel® Iris® X^e integrated graphics, and Intel® Killer™ Wi-Fi 6/6E (Gig+).

Thin and light business laptops with 11th Gen Intel® Core™ vPro® processors offer performance and hardware-enhanced security features alongside Intel® Wi-Fi 6/6E (Gig+) and Intel® Iris® Xe Graphics for seamless online meetings.

11th Gen Intel® Core™ processors with Intel® Iris® Xe Graphics bring AI-based intelligent performance, lightning-fast Intel® Wi-Fi 6 (Gig+), and beautiful visual experiences to thin and light laptops that let you work, game, and create like never before.

AMD Radeon RX 6700 XT Graphics

The AMD Radeon™ RX 6700 XT graphics card, powered by AMD RDNA™ 2 architecture, featuring 40 powerful enhanced Compute Units, the all new AMD Infinity Cache and 12GB of dedicated GDDR6 memory, is engineered to deliver ultra-high frame rates and powerhouse 1440p resolution gaming.

The cost of this graphics card is about $479 USD with a clock speed of 2321 to 2581 Mhz. It supports the PCIe 4.0 bus interface.

WHAT'S NEXT

VLSI TECHNOLOGY

The historical growth of IC computing power has profoundly changed the way we create, process, communicate, and store information. The engine of this phenomenal growth is the ability to shrink transistor dimensions every few years. This trend, known as Moore's law, has continued for the past 50 years. The predicted demise of Moore's law has been repeatedly proven wrong thanks to technological breakthroughs (e.g., optical resolution enhancement techniques, high-k metal gates, multi-gate transistors, fully depleted ultra-thin body technology, and 3-D wafer stacking). However, it is projected that in one or two decades, transistor dimensions will reach a point where it will become uneconomical to shrink them any further, which will eventually result in the end of the CMOS scaling roadmap. This essay discusses the potential and limitations of several post-CMOS candidates currently being pursued by the device community.

Steep transistors: The ability to scale a transistor's supply voltage is determined by the minimum voltage required to switch the device between an on- and an off-state

Spin devices: Spintronics is a technology that utilizes nano magnets' spin direction as the state variable. Spintronics has unique properties over CMOS, including nonvolatility, lower device count, and the potential for non-Boolean computing architectures.

Flexible electronics: Distributed large area (cm2-to-m2) electronic systems based on flexible thin-film-transistor (TFT) technology are drawing much attention due to unique properties such as mechanical conformability, low temperature processability, large area coverage, and low fabrication costs.

HOME AUTOMATION

The future of the way we live in and use our home is set to be one thing:Smart. But they

should be connected either to an IoT platform or to other devices that are smart, such as voice-activated digital assistants. These can manage devices at the other end of the smart scale, such as a thermostat monitoring Various sensors detect the location, operation, and condition of a device as well as the surrounding environment.

Control- Embedded software controls and personalizes a device.

Optimization - An analytical system diagnoses and optimizes a device's operation.

Autonomy - AI algorithms allow for the autonomous operation of a device, its self-coordination with other systems, self-diagnosis, and self-enhancement. These are true "smart" devices.

Smart homes offer much more than comfortable ambient temperatures. New devices that supposedly make your home smarter emerge in the market every day.

Security and safety -Sensors ensure perimeter and internal security, as well as monitor flood and fire risk.

Utilities management - Controllers monitor and optimize energy, gas and water consumption.

Wellness monitoring - Wearables communicate vitals and monitor chronic conditions, such as diabetes or Alzheimer's.

Smart appliances - This category includes connected fridges, stoves, dishwashers, Roombas, and coffee machines.

Entertainment - Music and video players that are attuned to the individual's tastes.

EMBEDDED SYSTEMS
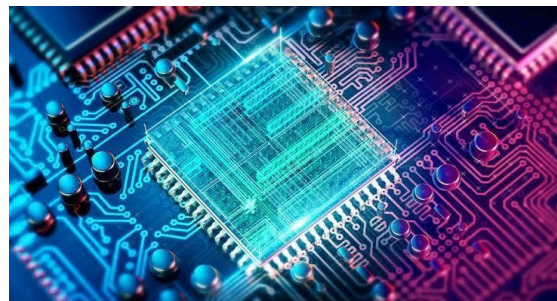
The embedded systems is a computer system, where software is embedded into the hardware to control and access the data in electronic-based systems. Now-a-days, the usage of Electronic devices increasing rapidly and can you imagine that the human person without a smartphone or computing device. Embedded is the Future and the scope of Embedded systems in different technologies has a more job opportunities in India in IoT, wearable technology, self-driving cars, energy systems. No electronic product is without embedded systems in the Market. This includes consumer, communication, automotive, military, industrial and medical applications.

SATELLITE COMMUNICATIONS

The Satellite Communications Industry is evolving as evidenced by numerous trends that one can expect to see on the horizon over the coming 18 months nd beyond. Satellite Technology has the potential to be a strong

player in Internet of Things (IoT) connectivity, along with "connecting the unconnected" in parts of the world where alternative communication paths ,at present, simply do not exist. The human race for advanced level includes Smallsats, constructed and launched less expensively and more quickly than traditional, large, geo synchronous orbit satellite; Reusable rocket fuel deployment; IoT access expands, a lot of Internet of Things devices are going to be in locations that don't lend themselves to easy access from a terrestrial network

What comes next remains to be seen, but it's clear that Satellite Technology is on the rise.

PERSONALITIES WHO MADE A DIFFERENCE

Sam Pitroda

Satyan Pitroda popularly known as Sam Pitroda(son of a carpenter) (born 4th May 1942) is an Indian telecom engineer, inventor and entrepreneur. He is popularly known as the Father of India's Computer and IT Revolution as he helped Prime Minister Rajiv Gandhi in bringing computerization as an advisor to the PM.He was also an advisor to the PM during Dr. Manmohan Singh's tenure. He was born Titlagarh in the eastern Indian state of Odisha,to a Gujarati family. . He completed his schooling from Vallabh Vidyanagar in Gujarat and completed his master's degree in Physics and Electronics from Maharaja Sayajirao

University in Vadodara. After completing his master's degree in Physics he went to the United States in 1964 and obtained a master's degree in Electrical Engineering from the Illinois Institute of Technology in Chicago.

In 1966 he went to work for GTE in Chicago. He is regarded as one of the earliest pioneers of hand-held computing because of his invention of the Electronic Diary in 1975. In 1974, Pitroda joined Wescom Switching which was one of the first digital switching companies. He developed the 580 DSS switch, over nearly four years. It was released in 1978. Wescom was acquired by Rockwell International in 1980, where Pitroda became vice president. During his four decades as an engineer, Pitroda filed scores of patents in telecommunications. The latest set of patents relate to mobile phone-based transaction technology, both financial and non-financial.

Pitroda also founded the National Innovation Council(2010), and served as the Advisor to the Prime Minister with rank of a cabinet minister on Public Information Infrastructure and Innovation, to help democratize information.

Pitroda has also started several businesses as a serial entrepreneur (Wescom Switching, Ionics, MTI, Market, WorldTel, C-SAM, etc.) in the US and Europe.

He has also served as an advisor to the United Nations and in 1992, his biography Sam Pitroda: A Biography was published and became a bestseller on The Economic Times list for five weeks.

Pitroda contributed to India's foreign and domestic telecommunications policies. He is considered one among many to be responsible for the telecommunication revolution in India and specifically, the ubiquitous, yellow-signed public call offices (PCO) that quickly brought cheap and easy domestic and international public telephones all over the country. In 2017, he was appointed as Chairman of Alpha-En

Corporation, a Lithium Metal Clean Technology company.

Lal Bahadur Shastri National Award, 2000 in recognition of his outstanding contribution to telecommunication and harnessing it for the social and economic transformation of developing countries. International Telecommunication Union (ITU) conferred the World Telecommunication and Information Society Award to Pitroda in Geneva on 17 May 2011. He was awarded in recognition of his dedication to promoting Information, communication, and technology as a means of providing a better life for humanity and social and economic empowerment. He was the first Indian to receive this award. World Telecommunication and Information Society Award, International Telecommunication Union (ITU), 2011, for his outstanding contribution to improving life in rural communities through information and communication technologies. Sam Pitroda is the first Indian to receive this prestigious award.

Robert Noyce

Robert Norton Noyce (December 12, 1927 – June 3, 1990), nicknamed "the Mayor of Silicon Valley", was an American physicist who co-founded Fairchild Semiconductor in 1957 and Intel Corporation in 1968. He is also credited with the realization of the first monolithic integrated circuit or microchip, which fueled the personal computer revolution and gave Silicon Valley its name.

Noyce grew up in Grinnell, Iowa. While in high school, he exhibited a talent for mathematics and science and took the Grinnell College freshman physics course in his senior year. He graduated from Grinnell High School in 1945 and entered Grinnell College in the fall of that year. He was the star diver on the 1947 Midwest Conference Championship swim team. He graduated Phi Beta Kappa with a BA in physics and mathematics in 1949. He also received a signal honor from his classmates: the Brown Derby Prize, which recognized "the senior man who earned the best grades with the least amount of work".

While Noyce was an undergraduate, he was fascinated by the field of physics and took a course in the subject that was taught by professor Grant Gale. Gale obtained two of the very first transistors ever produced by Bell Labs and showed them off to his class. Noyce was hooked. Gale suggested that he apply to the doctoral program in physics at MIT, which he did. Noyce had a mind so quick that his graduate school friends called him "Rapid Robert."He received his doctorate in physics from MIT in 1953.

After graduating from MIT in 1953, Noyce took a job as a research engineer at the Philco Corporation in Philadelphia. He left in 1956 to join William Shockley, a co-inventor of the transistor and eventual Nobel Prize winner, at the Shockley Semiconductor Laboratory in Mountain View, California.

After Jack Kilby invented the first hybrid integrated circuit (hybrid IC) in 1958, Noyce in 1959 independently invented a new type of integrated circuit, the monolithic integrated circuit (monolithic IC). It was more practical than Kilby's implementation. Noyce's design was made of silicon, whereas Kilby's chip was made of germanium. Noyce's invention was the first monolithic integrated circuit chip. Unlike Kilby's IC which had external wire connections and could not be mass-produced, Noyce's monolithic IC chip put all components on a chip of silicon and connected them with copper lines.The basis for Noyce's monolithic IC was the planar process, developed in early 1959

by Jean Hoerni. In turn, the basis for Hoerni's planar process were the silicon surface passivation and thermal oxidation methods developed by Mohamed Atalla in 1957.

Noyce and Gordon Moore founded Intel in 1968 when they left Fairchild Semiconductor. Arthur Rock, the chairman of Intel's board and a major investor in the company, said that for Intel to succeed, the company needed Noyce, Moore and Andrew Grove. And it needed them in that order. Noyce: the visionary, born to inspire; Moore: the virtuoso of technology; and Grove: the technologist turned management scientist. The relaxed culture that Noyce brought to Intel was a carry-over from his style at Fairchild Semiconductor.

Noyce was a holder of many honors and awards. President Ronald Reagan awarded him the National Medal of Technology in 1987. Two years later, he was inducted into the U.S. Business Hall of Fame sponsored by Junior Achievement, during a black tie ceremony keynoted by President George H. W. Bush. In 1990 Noyce – along with, among others, Jack Kilby and transistor inventor John Bardeen – received a "Lifetime Achievement Medal" during the bicentennial celebration of the Patent Act. In 2000, Kilby received the Nobel Prize in Physics; in his acceptance ("Nobel Lecture"), he mentions a small number of people whose work contributed to the success of integrated circuits, mentioning Noyce three times.

Walter H. Schottky
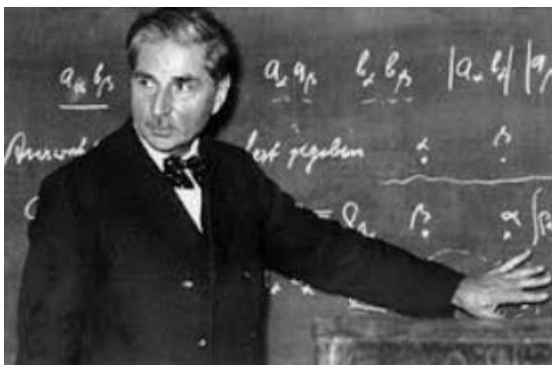
Walter Hans Schottky (23 July 1886 – 4 March 1976) was a German physicist who played a major early role in developing the theory of electron and ion emission phenomena, invented the screen-grid vacuum tube in 1915 while working at Siemens, co-invented the ribbon microphone and ribbon loudspeaker along with Dr. Erwin Gerlach in 1924 and later made many significant contributions in the areas of semiconductor devices, technical physics and technology.

Schottky graduated from the Steglitz Gymnasium in Berlin in 1904. He completed his B.S. degree in physics, at the University of Berlin in 1908, and he completed his PhD in physics at the Humboldt University of Berlin in 1912, studying under Max Planck and Heinrich Rubens, with a thesis entitled: Zur relativtheoretischen Energetik und Dynamik.

In 1924, Schottky co-invented the ribbon microphone along with Erwin Gerlach. The idea was that a very fine ribbon suspended in a magnetic field could generate electric signals. This led to the invention of the ribbon loudspeaker by using it in the reverse order, but it was not practical until high flux permanent magnets became available in the late 1930s.

Schottky–Nordheim barrier (SN barrier) has played an important role in the theories of thermionic emission and of field electron emission. Applying the field causes lowering of the barrier, and thus enhances the emission current in thermionic emission. This is called the "Schottky effect", and the resulting emission regime is called "Schottky emission".In 1923 Schottky suggested (incorrectly) that the experimental phenomenon then called autoelectronic emission and now called field electron emission resulted when the barrier was pulled down to zero. In fact, the effect is due to wave-mechanical tunneling. But the SN barrier has now become the standard model for the tunneling barrier. Schottky's contributions in surface science/emission electronics and in semiconductor-device theory now form a significant and pervasive part of the

background to these subjects. It could possibly be argued that – perhaps because they are in the area of technical physics – they are not as generally well recognized as they ought to be.

He was awarded the Royal Society's Hughes medal in 1936 for his discovery of the Schrot effect (spontaneous current variations in high-vacuum discharge tubes, called by him the "Schrot effect": literally, the "small shot effect") in thermionic emission and his invention of the screen-grid tetrode and a superheterodyne method of receiving wireless signals.

In 1964 he received the Werner von Siemens Ring honoring his ground-breaking work on the physical understanding of many phenomena that led to many important technical appliances, among them tube amplifiers and semiconductors.

CAREER PROSPECTS

In short, ECE is the ideal middle ground for acquiring all of the necessary skills to pursue a wide range of career opportunities. Maybe that's why the best colleges for electronics and communication engineering have such a strong hold on students! Let's take a look at the sea of opportunities that await an ECE graduate now that we've grasped this pull.

Entrepreneurship:

Engineers used to be wary of starting their own business. However, the recent accomplishments of many engineer entrepreneurs have encouraged the youth. After graduation, you have the option of starting your own business. To get started on this path, you should first define a common issue and develop a solution for it. The issue will arise in any industry. Flipkart, for example, eliminated the hassle of shopping offline, while PayTM alleviated cash shortages.

There are many resources available to aspiring entrepreneurs. You should enter a startup incubator to give your business a head start. AngelPrime and CIIE IIMA are two of India's many startup incubators. Entrepreneurship necessitates a great deal of patience. However, the experience of beginning and running a new company is priceless. Moreover, the returns of succeeding as an entrepreneur arefantastic. a business is invaluable.

Become an Expert:

Want to get a high-paying job at the start of your career? Then you could enrol in a course or earn a certification in a skill that is in high demand. Many businesses are looking for engineers who are knowledgeable about cuttingedge technologies like artificial intelligence and blockchain. Jobs in these fields are more lucrative. Furthermore, since high-quality courses often offer placement help, you won't have to worry about finding work. And there's a lot of demand for these abilities. Companies are in desperate need of experts in AI, data science, blockchain, and other related fields. This field, too, has a wide range of options. Each skill has its own set of applications. So, you have the option of choosing the one which you want to master. The following are the most in-demand talents on the market right now:

- The distributed ledger technology (blockchain)
- Machine Learning and Artificial Intelligence

- Data Science and Digital Marketing

- You can start your career by taking a course in any of them.

Look for internships:

It is always extremely difficult to find a full-time job in a reputable company shortly after graduation. This is, however, the best time to begin an internship or apprenticeship. Internships and apprenticeships are great ways to gain experience in a real-world setting. Despite the fact that they only last a few months (3-6 months), they should help you advance your career, they can help build your professional outlook and attain a deeper understanding of work ethics. Internships are similar to a short-term training programme in which you learn the ropes of the job, learn how to conduct yourself in the workplace, and identify your key strengths and weaknesses. They provide you with the ideal opportunity to learn and develop as a professional. Employers place a high value on internships and apprenticeships for a reason! If you're unsure what to do after engineering, and you're good at what you do and have impressed your boss, you might be able to land a full-time job with the same company. Doesn't it sound enticing? It is not rare for businesses to employ their best interns for fulltime positions.

Get a certification:

There is no end to learning, particularly if you are a curious soul who is always eager to learn new things. If you want to improve your skills before taking on a professional position, certifications are the way to go. You can enrol in certification classes specific to the field of engineering after you have completed your graduation. If you're looking for courses after engineering go through these certification programmes. Microsoft Certified Solutions Expert (Core Infrastructure), CEH (Certified Ethical Hacker), CISM (Certified Information Security Manager), CSM (Certified ScrumMaster), and PMP (Project Management Professional) are just a few of the most valuable certification programmes for recent B.Tech graduates. If you're not sure what to do after B. Tech, famous platforms such as CompTIA, Google, AWS, and, of course, upGrad, offer a variety of certifications. Software Development, Blockchain, Management, MBA, Data Science, Machine Learning, and Digital Marketing are only a few of the short- and long-term certifications offered by upGrad. Obtaining professional certifications would assist you in the following areas:

• In order to increase your professional credibility.

• To broaden your insight and skill set

• To increase the wage scale and strengthen career opportunities.

• To promote lifelong learning and career advancement.

Management:

If you're wondering what to do after B. Tech, studying management is a common career option among engineering graduates. Management studies will help you land a higher-paying job with more responsibilities.You'll need an MBA to work in this field. Following engineering, MBA is one of the most popular courses. And you'll need to take the CAT exam to do so (Common Aptitude Test). The CAT exam score will decide which institution will accept you. You would work as a manager in a variety of industries after studying management. After engineering, management is one of the best career opportunities in India. This is the best choice for those who want to quickly advance up the corporate ladder. In India, managers are among the highest-paid professionals. You would undoubtedly enjoy working in this field. Engineers, as you can see, have a wide range of career opportunities after graduation. Whether you want to work your way up the corporate ladder or conduct research, there are plenty of options available.

PROJECTS

MOBILE CONTROLLED ROBOT USING DTMF

DTMF stands for **D**ual **T**one **M**ulti **F**requency. DTMF is actually the generic term for Touch-Tone. When you press the buttons on the keypad, a connection is made that generates two tones at the same time. A "Row" tone and a "Column" tone. These two tones identify the key you pressed to any equipment you are controlling. When a key is pressed from our mobile, it generates a tone, which is a combination of two frequencies. Of the two frequencies, one is high frequency and another one is low frequency. This frequency can be decoded by the decoder IC into binary sequence. Using this binary sequence, the robot is controlled.

In this project, a simple robot is designed that can be controlled using a phone. The project is called DTMF Controlled Robot (without Microcontroller). This circuit consists of simple DTMF Tone decoder IC and a motor driver IC. DTMF based robotic vehicle circuit consists of DTMF Decoder IC, Motor Driver IC (L293D or L298N), motors and a simple robot chassis to hold all these components. The main components of the circuit are DTMF decoder IC, motor driver IC and motors. Mobile operated Robot is a Robot whose movement can be controlled by pressing the number of cell phone. The robot can move forward, backward, right or left which depends on the numbers you are pressing. The property of Robot to operate by the cell phone helps you to operate the robot from some distance.

DTMF robot with slight modifications can be used in industrial applications. DTMF robot with human detector sensor can be used at the time of disasters like earth quake to detect the human under buildings. DTMF robot with camera can be used in surveillance systems.

Block Diagram
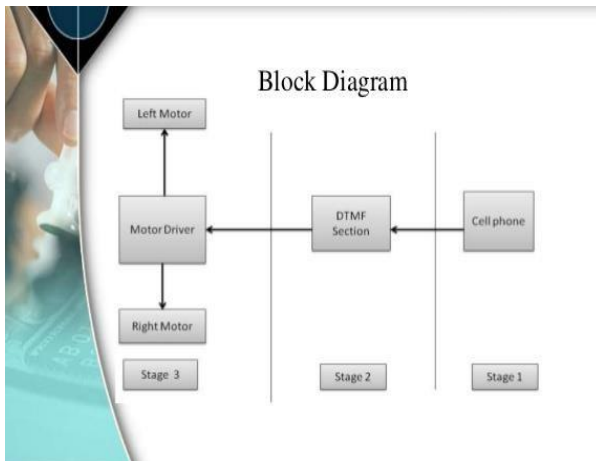
- The circuit consists of a decoder IC, Motor Driver IC (L293D or L298N), motors and a simple robot chassis to hold all these components.

- Tone from DTMF encoder is given to the DTMF decoder IC. It consists of operational amplifier, followed by pre filters to identify low and high frequencies.

- Then, it is passed to code detector circuit and it decodes the incoming tone into 4bits of binary data.

- This data at the output is directly given to the driver IC to drive the motors.

These motors rotate according to the decoded output.

ACUTE VOLTAGE PREDICTION

It is an ideal circuit for home to protect your valuable equipments from voltage fluctuations. Sudden fluctuation in supply is a very big problem in industries and domestic applications. It causes a major loss for industries, offices and homes.

Generally, voltage stabilizers are used in this type of applications to maintain constant AC voltage. However due to the abnormal AC supply, relays in voltage stabilizer switches ON

and OFF continuously. The frequent energization or de-energization of relays leads to the shortening the life time of appliances and the stabilizer itself. Hence it is better to use this project in order to control the appliances instead of costly stabilizers.

In this project, when supply voltage is high i.e., greater than a fixed voltage or when the supply voltage is low i.e., lower than a fixed voltage, we can detect them by using the IC (integrated circuits) and give an indication. Based upon that indication we can change the supply voltage and help the device from damage. Here the fixed voltage is designed based on our requirements.

This project gives a low cost and powerful solution for this problem. This circuit protects the costly equipment like TVs, air conditioners, refrigerators, etc. from high voltages as well as low voltages.
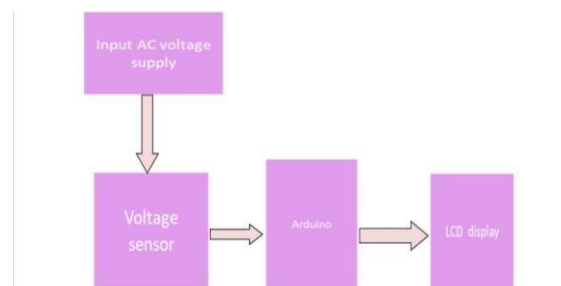
- The sense voltage is given as the input of the voltage sensor through the fan regulator.

- The voltage sensor senses the voltage and the o/p is given to the arduino.

- The result is displayed on the LCD which is connected to the arduino.

- LCD displays the over and under voltage when the sense voltage is above the maximum mentioned voltage and when below the minimum mentioned voltage respectively.

ARDUINO BASED WIRELESS FREQUENCY METER

This project describes an Arduino-based wireless frequency meter designed to measure frequency of sinusoidal AC signals. This project can be used for experimenting, learning, testing and troubleshooting audio equipment in the audible range between 50Hz and 3kHz.

The signal whose frequency is to be measured is applied as test signal input terminals in the transmitter-side. Carrier frequency used here is 434MHz. The 434MHz transmitter (TX) and receiver (RX) modules are used to transmit and receive radio frequency (RF) signals between two devices. On receiver side, receiver module demodulates the received signal. DATA pin of RX is connected to digital I/O pin 5 of Arduino Uno, which calculates frequency of the test signal and displays it on the LCD.
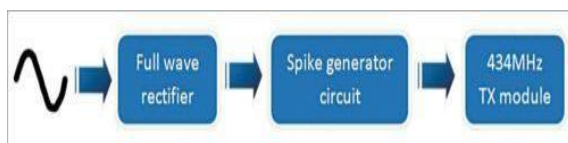
Block diagram of the transmitter side

Block diagram of the receiver side

The signal whose frequency is to be measured is applied as input in the transmitter side. A bridge rectifier, consisting of 4 diodes connected as a bridge configuration is used to convert the AC input signal to the pulsating DC signal. Bridge rectifier performs full wave rectification. The pulsating DC signal is given to opto-coupler IC which converts pulsating DC signal to spikes which can be considered as digital signal. Power supply for opto-coupler and RF transmitter is given using 9V battery. The digital data output from the opto-coupler is given to the data input of RF transmitting module. A 9V battery is used as power supply to the transmitting module. Capacitors are used in series with the battery to remove the AC ripple present in the power supply. LM7805 voltage regulator is used to maintain constant 5V input to the transmitter and opto-coupler IC.

On the receiver side, the signal is received and demodulated to the original signal using 434MHz RF receiving module. The data pin of 434MHz receiving module is connected to digital I/O pin 5 of Arduino UNO. The code for calculating the frequency of the received signal is dumped into the Arduino, measures the frequency of the signal. The power supply to receiving module and LCD display is given through the Arduino. The frequency of the received signal is twice that of original input signal. A 10kohm variable resistance or pot is used to adjust the contrast of the LCD display.

WI-FI JAMMER FROM AN ESP8266

Have you ever wanted to block all wifi signals or just want to kick someone out from wifi or a neighbours wifi out. You can perform multiple attacks on this device such as you can jam any particular wifi network or you can do beacon spam or random beacon spam or you can simple deauth all you just need the mac address of the WiFi router and of the client device which you want to disconnect from the network. You don't need to be in the network or know the password, it's enough to be in its range.

ESP is very popular for Wi-Fi tricks like creating a fake Wi-Fi network, serving your own page to steals someone's password, block the Wi-Fi network etc .so by jamming the Wi-Fi network you can block or jam any Wi-Fi connection, and no one is able to connect to that Wi-Fi network even after knowing the password. This can be done with a ESP8266. A jammer sends noise signals to the Wi-Fi spectrum (2.4GHz) thus disturbing original Wi-Fi frequency spectrum.
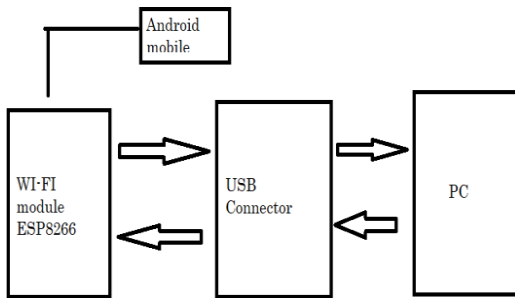
PRINCIPLE:

- The Wi-Fi jammer is a device which transmits the signals to the same frequency.
- Every wireless technology works on a specific spectrum of radio frequency, and they work under certain noise tolerance and amplitude values. If, someone is able to generate a high amplitude noise signal at that particular frequency, jamming is possible.

WORKING PROCEDURE:

- Now we can control our jammer using any android mobile or PC just Connect to ESP8266 Module.
- Scan for Wi-Fi networks from Mobile or PC or MAC and connect to Wi-Fi. Enter the password.
- We can change this SSID and Password from the code we uploaded. Once connected, we can use this ANDROID app to control this Wi-Fi. Or we can open up our browser and go to 192.168.4
- Now we can scan for networks... Note: While scanning the ESP8266 will shut down its access point, so we may have to go to our settings and reconnect to the Wi-Fi network manually....and start different attacks

Click on the attack tab choose deauthorize all everyone on the Wi-Fi is disconnected now.

TECHNOLOGY THE NEW AGE PROBLEM SOLVER

Technology is being updated day-by-day. Technology makes the things simple and solves convoluted problems in an easy way. AI, IOT and Robotics are the major technologies which changes the way of living of humans. The problem-solving skills of technology is measured very high so that it became very important in almost all human fields.

Water Scarcity

A Machine that VICI Labs developed called the WaterSeer. It can pull moisture from the air and produce up to 11 gallons of clean drinking water. It blows wind into an underground chamber that condenses and forms water. There have not been many field tests yet which has caused to raise an eyebrow. Hopefully, the machine does its job and can help produce clean drinking water for countries that have limited access to it.

Accident Prevention

Autonomous vehicles have been tested for millions on public roads. Pilot programs for delivery and taxi services are under way in places like suburbs of Phoenix. But driverless cars still aren't ready to take driver roads in general. They have trouble in handling chaotic traffic and difficulty with weather conditions like snow and fog. If they can be made reliably safe, they might allow a wholesale reimagining of transportation. Traffic jams might be eliminated, and cities could be transformed as parking lots give way to new developments. Above all, self-driving cars, if widely deployed, are expected to eliminate most of 1.25 million deaths a year caused by traffic accidents.

Education

When a Stanford University professor offered a free online course in artificial intelligence, he had no idea that the experiment would attract 160,000 students from 190 countries and generate a wave of publicity. That's one of many examples of how technology is reshaping education around the world. From the rapid proliferation of massive open online courses, or MOOCs, to the widespread use of mobile devices that support a variety of "blended learning" models (part online, part bricks-and-mortar based), technology is creating new challenges and many new opportunities for educational institutions of all types, from early education to universities.

"Technology is changing the dynamics of education, especially the relationship between teachers and students. As educators begin to rethink the learning experience, we believe it will be important to also reshape educational spaces to support this evolution," says Andrew Kim, a Steelcase WorkSpace Futures researcher and a member of the Steelcase Education Solutions team that has been investigating the spatial implications of learning and technology

TECHNOLOGY NEWS

Soft Tactile Sensor

A joint research team co-led by City University of Hong Kong (CityU) has developed a new soft tactile sensor with skin-comparable characteristics. According to scientists, a robotic gripper using the sensor would be able to accomplish a range of challenging tasks such as stably grasping fragile objects or threading a needle. The research has provided new insight into tactile sensor design and could contribute to various applications in the robotics eld, such as smart prosthetics and human-robot interaction. A main characteristic of human skin is its ability to sense the shear force, meaning the force that makes two objects slip or slide over each other when coming into

contact. By sensing the magnitude, direction and the subtle change of shear force, our skin can act as feedback and allow us to adjust how we should hold an object stably with our hands and fingers or how tight we should grasp it. This new sensor comes in a multi-layered structure like human skin and includes a flexible and specially magnetised film of about 0.5mm as the top layer. When an external force is exerted on it, it can detect the change of the magnetic field due to the film's deformation. More importantly, it can "decouple", or decompose, the external force automatically into two components - normal force (the force applied perpendicularly to the object) and shear force, providing the accurate measurement of these two forces respectively. The sensor also possesses another human skin-like characteristic - the tactile "super-resolution" that allows it to locate the stimuli's position as accurately as possible. "We have developed an efficient tactile super-resolution algorithm using deep learning and achieved a 60-fold improvement of the localisation accuracy for contact position, which is the best among super-resolution methods reported so far," said Dr Shen Yajing, Associate Professor at CityU's Department of Biomedical Engineering (BME). This efficient tactile super-resolution algorithm can help improve the physical resolution of a tactile sensor array with the least number of sensing units, so reducing the number of wirings and the time required for signal transmitting.

Energy-harvest technology

Triboelectric nanogenerators (TENGs) are an emerging technology that harvests the freely available mechanical energy from daily human activities and could be used to identify dangerous driver behaviour, improving the safety of roads. In a study published by Nano Energy, engineers from the University of Surrey have revealed how they used recycled plastic cups and silk cocoon waste to develop a soft and skin friendly self-powered sensor, which can be used to sense human activities.

When coupled with an AI system and applied in a car setting, the smart sensor could flag potentially dangerous driving trends, including slow brake reaction times. The highly flexible and biocompatible sensor could either be used as a wearable item on clothing or placed within the fabric of the steering wheel, horn, gear stick and brake pedal. In tests, it provided real-time feedback on the driver's actions, which allowed the AI system to compute performance. Commenting Dr Bhaskar Dudem, principal author of the study and Research Fellow at the University of Surrey's Advanced Technology Institute, said, "We are all excited by how AI will influence future consumer electronics, but this future must also be friendly to our planet's environment. Our recycled silk-based smart sensor technology is a hint of what the future holds and, with support from industry, we believe we can soon bring it to market." Professor Ravi Silva, Director of the ATI and corresponding author, added, "Whilst in this example we tested our sensors to monitor driver behaviour, we believe the ideal application of the self-powered smart sensor technology is in future driverless cars and other Industry 4.0 automation systems. This eco-friendly cutting-edge project with international collaborators inspires us at the Advanced Technology Institute to keep inventing solutions to real-world problems faced by society."

NanoEdge AI Studio V2

Cartesiam has unveiled the NanoEdge AI Studio V2, the first integrated development environment (IDE) that simplifies the creation of machine learning, inference, and now classification libraries for direct implementation on Arm Cortex-M MCUs. With thousands of commercially available industrial IoT (IIoT) embedded devices already in production with NanoEdge AI Studio V1 for anomaly detection, the addition of classification libraries to NanoEdge AI Studio V2 will enable developers to go beyond anomaly detection to qualify problems directly in endpoints. "Cartesiam makes tools for

embedded developers, offering an intuitive pushbutton approach that requires no background in data science, opening AI to the billions of resource-constrained embedded devices built with Arm Cortex-M MCUs," said Joël Rubino, CEO and co-founder, Cartesiam. "We initially designed NanoEdge AI Studio to meet demand from our customers in predictive maintenance, who, having accumulated data on the use of their equipment, asked us to help them easily qualify their events as well as to anticipate them. The new version of our IDE allows those customers - and any other embedded designer - to develop a classification library without the usual challenges associated with signal processing and machine learning skills. This dramatically reduces costs and speeds time to market." Cartesiam has also launched 'Use Case Explorer' at data.cartesiam.ai, a web-based platform that will enable users to download real datasets and try out the NanoEdge AI Studio IDE on representative use cases. Cartesiam said that it would be continuously enhancing the portal with additional datasets

Xilinx acquires Falcon Computing Solutions

Xilinx has acquired Falcon Computing Solutions, a privately-held provider of high-level synthesis (HLS) compiler optimisation technology for hardware acceleration of software applications. The acquisition will make adaptive computing more accessible to software developers by enhancing the Xilinx Vitis Unified Software Platform with automated hardware aware optimisations. The integration of Falcon Computing's compiler technology into the Vitis platform will allow software developers to accelerate C++ applications with minimal hardware expertise. Falcon Computing's source code transformation reduces the need for application developers to adapt their code, or add architecture-specific programming directives, in order to achieve significant hardware acceleration. "The growing demand for

adaptive computing is driving a new era of FPGA adoption in the data centre and embedded applications," said Salil Raje, executive vice president and general manager, Data Center Group at Xilinx. "Falcon Computing's innovative compiler technology and highly specialised compiler team will provide critical expertise that will advance software programmability and help bring the benefits of adaptive computing to more developers."

ELECTRONIC PUZZLE
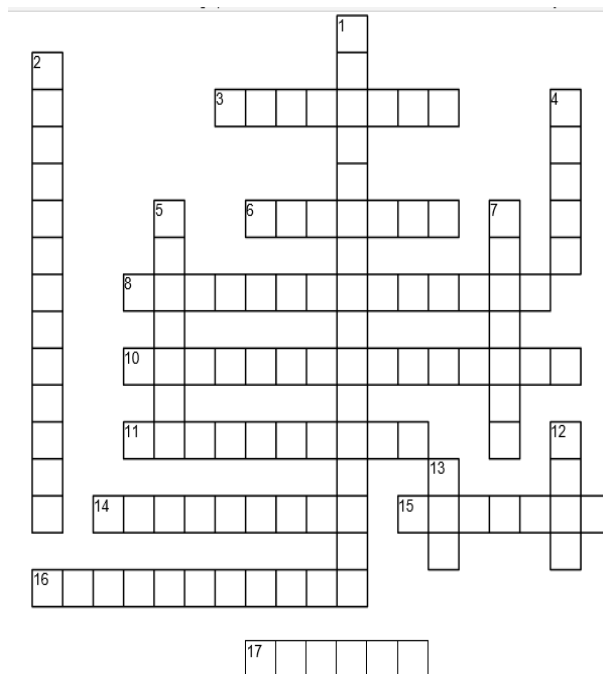
Across

3.Useful power output divided by total electrical power consumed

6. A flow of electrical charge

8. The work done by a charged particle

10. A circuit with two or more paths

11. How the material reduces electrical current flow

14. A material that conducts heat, electricity, or sound

15. The current between two points is proportional to the voltage across those points

16. A form of energy resulting from the existence of charged particles

17. A unit of electrical current equal to a flow of one coulomb per second

Down

1. An electrical charge that lets work be accomplished

2. A closed circuit with only one path

4. The rate at which electrical energy is transferred by a circuit

5. The electromotive force expressed in volts

7. A complete course of cunductors of which a current can travel

9. The unit of electromotive force

12. The component of a circuit that consumes power

13. The unit of electrical resistance

Answers

A crossword puzzle with the following answers:

- 1 Down: ELECT (E-L-E-C-T...)
- 2 Down: SERIESCIRCUIT
- 3 Across: EFFIENCY
- 4 Down: POWER
- 5 Down: VOLTAGE
- 6 Across: CURRENT
- 7 Down: CIRCUIT
- 8 Across: ELECTRICALWORK
- 9 Down: VOLT
- 10 Across: PARALLELCIRCUIT
- 11 Across: RESISTANCE
- 12 Down: LOAD
- 13 Down: OHM
- 14 Across: CONDUCTOR
- 15 Across: OHMSLAW
- 16 Across: ELECTRICITY
- 17 Across: AMPERE
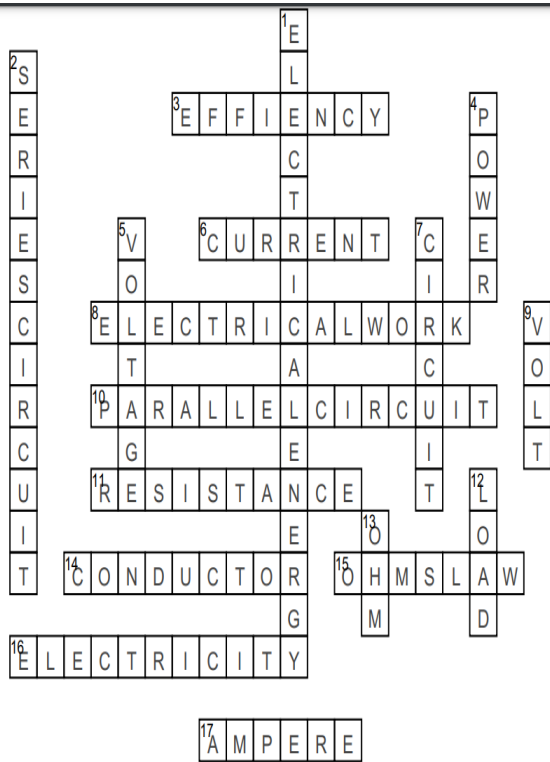
Faculty Publications

(Academic Year: 2020-2021)

-

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Summary Sheet

S.No	Faculty Name	No of Journals	No of Conferences	Total
1	Dr. K. Ashoka Reddy	0	2	2
2	Dr. G. Raghotham Reddy	2	2	4
3	Dr. B. Rama Devi	0	2	2
4	Smt. S.P. Girija	0	1	1
5	Sri E. Suresh	0	1	1
6	Smt A. Vijaya	0	1	1
7	Dr. M. Raju	1	2	3
8	Dr. V. Venkateshwara Reddy	0	1	1
9	Sri B. Komuriah	0	1	1
10	Sri A. Srinivas	0	1	1
11	Sri K. Ramudu	2	2	4
12	Sri V. Raju	1	1	2
13	Sri A Pavan	0	1	1
14	Dr K Sowjanya	0	1	1
15	Dr B. Dhanalaxmi	3	0	3
16	Smt E Susmitha	0	1	1
17	Mr Md Abdhul Muqueem	0	1	1
18	Sri D Santhosh Kumar	0	1	1

1) **Journals: 09**

2) **Conferences:22**

   Total: 31

		Publication Details
S.No.	Faculty Name	Journal Publications
1	Dr. G. Raghotham Reddy	1) Chenigaram Kalyani, Kama Ramudu, GantaRaghotham Reddy, *"Enhancement And Segmentation Of Medical Images Using AGCWD And ORACM"*, iJOE–Vol.16,No.13,2020. 2)Ramudu Kama and GantaRaghotham Reddy "Modified Spatial Kernel Fuzzy Clustering By Median Membership Filtering And Level Set Method For Automatic Segmentation Of Oil Spill From Earth Observatory Images" International Journal of Research and Analytical Reviews, Vol. 29, No.4, (2020), pp.8703–8715
2	Dr. Manda Raju	1)PSanthoshKumar, V.PSakthivel, MandaRaju, P.DSathya *"Holistic Review On Brain Tumor Segmentation Using Deep Learning"* International Journal of Future Generation Communication and Networking Vol. 13, No. 1, (2020), pp.1081-1091
3	Dr. K Ramudu	1)Chenigaram Kalyani, Kama Ramudu, GantaRaghotham Reddy, *"Enhancement And Segmentation Of Medical Images Using AGCWD And ORACM"*, iJOE–Vol.16,No.13,2020. 2)Ramudu Kama and GantaRaghotham Reddy "Modified Spatial Kernel Fuzzy Clustering By Median Membership Filtering And Level Set Method For Automatic Segmentation Of Oil Spill From Earth Observatory Images" International Journal of Research and Analytical Reviews, Vol. 29, No.4, (2020), pp.8703–8715
4	Dr. V. Raju	1)Veerati Raju,Rajeev PankajNelapati, K. Sivasankaran "Impact of Device Geometrical Parameter Variation on RF Stability of SELBOX Inverted-T Junctionless FINFET", © Springer Nature B.V. 2020.
5	Dr.B Dhanalaxmi	1)Banavath Dhanalaxmi and Lakavath Suryanarayana "Analysis of Bayes Shrink Thresholding for Medical Image Denoising" PENSEE Volume 51, Issue 1, 2021 pp: 57-60. ISSN NO: 0031-4773. SCOPUS, SCI. 2)Banavath Dhanalaxmi, Lakavath Suryanarayana and T. Srinivasulu "A Novel Transform Based Image Compressive Sensing Reconstruction" International Journal of Advances in Engineering and Management (IJAEM) Volume 2, Issue 1, pp: 684-688, (UGC approved). 3)Banavath Dhanalaxmi, Lakavath Suryanarayana and T. Srinivasulu "A Review on Parameters of Chaos Based Cryptography Image Encryption and Decryption" International Journal of Research and Analytical Reviews (IJRAR), December 2020, Volume 7, Issue 4, pp.204-211. (E-ISSN 2348-1269, P- ISSN 2349-5138), (UGC approved).

Enhancement and Segmentation of Medical Images Using AGCWD and ORACM

Chenigaram Kalyani

Kamala Institute of Technology and Science, Huzurabad, India.

KamaRamudu$^{(\boxtimes)}$,GantaRaghothamReddy

Kakatiya Institute of Technology and Science, Warangal, India

ramudukama@gmail.com

Abstract—Images that are obtained in the real world in low contrast are in- appropriate for human eyes to read the medical images. Enhancement and seg- mentation have an important role to play in digital image processing, pattern recognition, and the computer vision. Here, this paper presents an effective way of changing histograms and improving contrast in digital images. Segmentation is done on Adaptive Gamma Correction Weighted Distribution (AGCWD) en-hancedimages.Histogramequalizationisanimportanttechniqueforcontrasten-hancement. Nevertheless, modern Histogram Equalization commonly results in unnecessary contrast enhancement, which in turn offers an un-natural presence to the processed image and produces visual artifacts. We present an automated transformation technique that helps boost dimmed image brightness by gamma correction and weighted distribution, commonly known as Adaptive Gamma Correction Weighted Distribution (AGCWD). The contrast enhancement level can be modified using this technique; noise robustness, white or black stretching, andtheprotectionofmediumbrightnesscanbeeasilyintegratedintotheoptimi-zationprocess.Finally,acontrastenhancementalgorithmwithlowcomplexityis introduced. All the process of enhancement will be done during the process of pre-processingtheimage.Later,inpost-processing,weintroduceaspecificlevel set method known as Online Regionbased Active Contour Model(ORACM)for better segmentation of an enhanced AGCWD image, and it is compared with the traditional level setmethod.

Keywords—Image Enhancement, Histogram Equalization, AGCWD, Image Segmentation, ACM with SBGFRLS, ORACM Level Set-Method

1 Introduction

Medical images are a special type of image that can be used to diagnose the disease in patients. There are several methods for obtaining these images, just like computed tomography scan, magnetic resonance imaging and X-ray imaging. Generally, these types of imaging methods result in poor contrast to medical images. The physician's observation is imminent and may lead to a misdiagnosis. Conversely, the attained

Modified Spatial Kernel Fuzzy clustering by Median Membership filtering and Level Set Method for Automatic Segmentation of Oil Spill from Earth Observatory Images

Ramudu Kama and GantaRaghotham Reddy

Assistant Professor and Professor, Department of ECE,
Kakatiya Institute of Technology and Science, Warangal, Telangana, India.
Email:ramudukama@gmail.com and grrece9@gmail.com

Abstract

In this paper, we extant a unique hybrid method called Modified Spatial kernel fuzzyLevel set Method (MS-KFLSM) for accurate and fully automatic segmentation of oil spill regions from Earth Observatory SAR images. The proposed algorithm is diversified into phases called pre-processing and post-processing on the image. In the first phase, preprocessing on input SAR images by incorporating the spatial information and median membership filtering into Kernel Fuzzy C-means (KFCM) clustering to improve clustering enactment, accelerate convergence and getting rid of noise but outliers and boundary leakages are present even after the pre-processing. Next phase, post- processing is required to apply on preprocessing results in directive to refine the segmentation results and overcome the difficulties in the previous stage using an adaptive level set method. In this way, the results of the grouping before processing will be affected by limit losses and outliers. To reduce these limitations in the first phase with the help of the adaptive level approach set in the second phase, it is necessary to obtain solid and superior segmentation results. The presentation of the level set segmentation is exposed towards a suitable introduction and a perfect conformation ofthe control parameters. It can immediately evolve frompreliminarysegmentation through widespread clustering of the space nucleus. The parameters controlling the evolution of the set of levels are also foreseen by the consequences of the widespread grouping of the nucleus. The proposed technique is more advantageous through the problem of local minima; these improvements facilitatesolidsegmentation.The proposed algorithm is performed superior segmentation compared to conventional level settechniquesintermsofthenumberofiterations,calculationtimeandPSNR.

Keywords: Earth observatory Images, Spatial KFCM Clustering, Image Segmentation and Level set method

1. Introduction

A well-studied hassle in computer vision is that the fundamental mission of segmenting or partitioning an image into disjoints areas with programs beginning from clinical photo analysis, control, or military surveillance and monitoring. Although theoverall segmentation problem entails setting apart N wonderful partitions, a piecewise assumption of two units is generally made. This is, the photo is thought to be made out of two homogeneous regions, regularly referred to as "object" and "history".The

HOLISTIC REVIEW ON BRAIN TUMOR SEGMENTATION USING DEEP LEARNING

PSanthoshKumar[1], V.PSakthivel[2], MandaRaju[3], P.DSathya[4]

[1]Research Scholar, Department of ECE, Annamalai University ,Chidambaram, Tamilnadu, India.

[2]Assistant Professor, Department of EEE. Government College of Engineering, Dharmapuri, Tamilnadu, India .

[3]Associate Professor, Department of ECE Kakatiya Institute of Technology and Science, Warangal, Telangana, India.

[4]Assistant Professor, Department of ECE, Annamalai University, Chidambaram, Tamilnadu, India

Abstract

Brain is central apprehensive framework of human. The main reason of death in human being will be tumor of brain. The main thought behind deep learning will be inclusive characteristic representations might be effectively learned with deep architectures that are collected of stacked layers of "trainable non-linear operations". Nevertheless, due to picture content diversity, it will be critical to learn effective characteristic representations directly from pictures for MRI. Latest recommended methodologies are to settle the kernel of 1st layer as HPF (high-pass filter). It may be known as pre-processinglayer.Fordifferentwords,theinformationoflabelwillbenotsufficienttolearncapable characteristicrepresentationsforbraintumor.Thecurrentsurveysections&categorizestheMRIbrain tumor picture as malevolent or benevolent. The procedure includes are Feature extraction, Pre-processing, classification and Segmentation. The current work segments the tumor utilizing Genetic Algorithm identifies and categorizes the tumor utilizing hybridclassifier.

Keywords: Auto Encoders (AE), Brain tumor (BT), Deep Learning (DL), Deep Convolution Neural Networks (DCNNs), Deep Neural Networks (DNN), Genetic Algorithm (GA), Generative Adversarial Networks (GAN), Long Short-Term Memory (LSTM), Magnetic Resonance (MR), Rectifier Linear Units (ReLU), Recurrent Neural Networks (RNN)

I. INTRODUCTION

The brain will be the handling center &responsible for implementation of all actions through the body of human. The tumor formation in brain might threaten the life of human specifically. The initial finding of brain disease is expanding the survival rate of patient. Between the amounts of imaging modalities, MR imaging will be expansively utilized toward physicians to choose the determination tumors [1]. MRI will be a non-invasive & best soft tissue contrast imaging modality that gives significant information of size, localization, and shape of brain tumor [2]. MRI will draw more cordiality for brain tumor analysis in clinical [3].In present clinical imaging, distinctive sequences of MRI have utilized to best finding and exact explanation of tumor levels. They incorporate "T1-weighted MRI (T1w), T1-weighted MRI for contrast enhancement (T1wc), T2-weighted MRI (T2w), FLuid- Attenuated Inversion Recovery (FLAIR)", and so on. Figure 1 indicates these 4MRI successions for brain [4]. The reaction for brain tumor medication relies on experience of physician& their information [5].

23

Impact of Device Geometrical Parameter Variation on RF Stability of SELBOX Inverted-T Junctionless FINFET

Veerati Raju[1] · Rajeev PankajNelapati[1] · K. Sivasankaran[1]

© Springer Nature B.V. 2020

Abstract

In recent times, the role of FINFET devices is increasing in the field of RF-IC design for realizing the high frequency circuits. Asa result, high frequency characteristics including RF stability needs to be investigated carefully. Hence this work presents the impact of device geometrical and process parameter variations on the RF stability of 20 nm SELBOX Inverted-T JunctionlessFINFET (SELBOX ITJLFET). The stability factor (K), critical frequency (f_k) and its dependency on small signal parameters (SSP) are investigated by varying the device and process parameters like Gate Workfunction (GWF), fin height (H_{fin}), fin width (W_{fin}), Source underlap spacer length (L_{US}) and SELBOX length (L_G). In addition, the relation between the bias and the stability factor of the device is also studied to identify the bias operating point in a stability perspective. From the simulation results, it is found that larger the SELBOX and L_{US}, lower the critical frequency and thereby making the device unconditionally stable at lower frequencies. Finally, an optimized design guideline is proposed, which makes the device suitable for high bandwidth applications.

1 Introduction

For the past two decades, the electronic industry has moved towards the usage of nanodevices, which require highly so-phisticated tools to accommodate the highly-dense circuits on a single chip. To achieve denser circuits, the semiconductor industry was forced towards aggressive scaling of MOSFETs. The literature reveals that the downscaling of the MOSFETs to 60 nm has yielded better results and further scaling of the device dimensions, the single gate devices are losing gate control over the channel subsequently vulnerable to short channel effects (SCEs) [1]. After significant research, re- searchers have comprehended that multi-gate structure en- hances the gate-channel control. Various architecture like Double Gate Silicon on Insulator (DGSOI)MOSFETs, Tri Gate(TG) MOSFETs, Gate All Around(GAA) MOSFETs, Tunnel FET (TFET), and FinFETs have been put forwardfor suppressing SCEs [2–9]. From the literature, it is found that FinFETs showed better efficacy towards digital as well as analog applications [10, 11]. ITRS forecasted that the com- mercial manufacturing sectors could develop 3D devices up to 5 nm node [12]. With the technological advances, the semi- conductor sector has provided a roadmap for processing 3D devices and 22-nm node FinFET has been approved by com- panies such as Intel and TSMC [13]. Due to the high degree of confinement and the gap between the Fins, FinFETs exhibit low leakage current [14]. To improve design efficiency or pitch current, the author suggested that SOI MOSFETs can be created in an unused pitch area and eventually integrated with DG FinFETs [15]. To exploit the advantages of vertical and horizontal thin body structures, Mathew.et.al and Zhang.et.al fabricated a hybrid Fin architecture known as inverted 'T' FET for the first time, which has overshadowed the performance of conventional FinFET [16]. Furthermore, exploration is carried out with the use of high k gate dielectric, high k symmetric & asymmetric spacer to enhance device performance [17–21]. Moreover, all of these devices discussed above require ultra-steep doping when they are scaled below 45 nm and leave fabrication extremely difficult[22]. To make the fabrication process simpler, a junctionless device that doesn't have any junctions has been proposed

ANALYSIS OF BAYES SHRINK THRESHOLDING FOR MEDICALIMAGE DENOISING

DHANALAXMI BANAVATH[1] SURYANARAYANA LAKAVATH[2]

1. Assistant Professor, Kakatiya Institute of Technology and Science, Warangal, Telangana, India.
2. Assistant professor, University College of Pharmaceutical Science, Kakatiya University.

ABSTRACT: The digital image contains information and passed by transmitting media. When the image travels in the transmitting media,noiseinterferes with it due to different problems and these noises are introduced in the received image. Additive Gaussian noise is removed by applying various Image denoising methods.Furthermore, the quality of reconstructed image is improved.This project represents the performance analysis of Bayes shrink method comparison with the Visu shrink thresholding method. The output results of Bayes Shrink thresholding method gives good performance than previous method like VisuShrink. Finally,the reconstructed image quality is checked by PSNR, MSE and Maxabs.

Keywords: Denoising,noise, Wavelet thresholding,hard/soft thresholdingrules,PSNR, MSE and Maxabs

I. INTRODUCTION

When receive the input images some disturbance come with it and produce a noisy image while processing. In an image, efficient suppression of noise had a important role. Image denoising is a restoration process, forrecovering of an image attempts are made and degraded by using degradationprocess. Wavelet thresholding is one of the method of image denoising method. Consider in wavelet, coefficients with small resolution values represents the noise and large resolution values represents the more signal information than noise[1,5]. The thresholding rules are applied on these resolution coefficients. Replacing noisy coefficients by zero andInverse wavelet transform may lead to reconstructed

……(3)

$$T_H(x) = \text{⍰} \begin{cases} x \text{\\\\} x \geq \lambda \\ 0 \quad otherw\text{\\} s \end{cases}$$

fundamental problem in image processing.Fordenoising, general imagedegrading modelrepresented as f=y+ σ. n$_G$, where y=degradingobservation, n$_G$=additive Gaussian noise Representation of wavelet coefficient of noisecontained image f(i,j) is in matrix form i.eX=W*fand the output of DWT is four subregions(LL,LH,HL,HH). Perform DWT only on approximatecoefficients(LL)and thresholding rules are applied ondetail coefficients (LH,HL,HH). Finally perform IDWT of modified wavelet coefficients to get thereconstructed image y$^{\wedge}$.

Finally the matrix representation of denoised image f^=w^{-1}y .

Basic thresholding functions:
Wavelet shrinking removes noise from images byshrinking empirical wavelets in coefficients in wavelet domain and is a non linear denoising image produce to remove noise.

1. **SoftThresholding:**called as shrinking function[1] , which takes argument and shrinks the coefficients towards a ZERO. Classical soft thresholding shrinking function can be obtained by probability density function(PDF). If λ is threshold value,thenthresholding function calculated as

$$(x) = \text{⍰} \begin{cases} x - \lambda \text{\\\\} x \geq \lambda \\ \text{\\\\} x < \lambda \dots\dots(2) \\ x + \lambda \text{\\\\} x \leq -\lambda \end{cases}$$

2. **Hardthresholding:** It keeps or remove the resolution coefficients based on its magnitudeand written as in equation is

A Novel Transform Based Image Compressive Sensing Reconstruction

BANAVATH Dhanalaxmi[a], LAKAVATH Suryanarayana[b], SRINIVASULU Tadisetty[c]

a) Dept. of ECE, Kakatiya Institute of Technology and Science, Waranagal, T.S., India.
b) Dept. of Pharmacy, kakatiya University, Warangal, T.S., India
C) Dept. of ECE, KU College of Engineering & Technology, Kakatiya Univerity, Waranagal, T.S., India.

ABSTRACT: Based on the sparse characteristics of image signal in Contourlet transform domain, the basic principle of Contourlet transform is analyzed, and a compression perception reconstruction method based on Contourlet transform is proposed. The basis function of Contourlet transform is not strictly orthogonal to the orthogonal transformation matrix. The improved gradient projection algorithm is used to recover the sparse processing coefficients, and the low rate reconstruction of the image is realized under the condition of guaranteeing the image quality. Experimental results show that the robustness of the algorithm is better.

I. INTRODUCTION

In recent years, the image compression method based on transform has received more and more attention. The JPEG compression standard based on Discrete Cosine Transform (DCT) and the JPEG2000 compression standard based on wavelet transform are widely used [1]. But DCT time-frequency analysis performance is poor, and wavelet transform does not take into account the geometric regularity of the image itself, and cann't capture the smoothness of the contour, and this will affect the image compression performance. In [2], a new multi-scale geometric analysis, contourlet transform is proposed, which uses a small number of coefficients to express smooth contours with better sparseness. Therefore, the image processing method based on Contourlet transform has been extensively studied in recent years.

Although the contourlet transform improves the compression effect of the image, the existing compression method requires the nyquist sampling theorem to complete the analog-to-digital conversion, and then discard the large number of unimportant data by compression, which leads to the waste of resources [3]. In this paper, the theory of Compressive Sensing (CS) is proposed in [4],

which effectively solves this problem and points out a new direction for image compression. At present, the image compression sensing method combined with wavelet transform has already been studied, and contourlet transform with higher sparse characteristic can obviously be applied in this direction. According to the above ideas, this paper analyzes the sparse characteristics of the image signal in the contourlet domain, and proposes an image compression sensing sampling and reconstruction method based on Contourlet transform.

II. CONTOURLET-DOMAIN SPARSITY ANALYSIS OF IMAGE SIGNALS

the high-pass subband at each scale with the direction filter bank on the basis of the LP decomposition Contourlet transform is a multi-resolution, local, multi-directional image representation method. The transformation process mainly includes two steps. The first step is to use Laplacian Pyramid (LP) Multi-resolution decomposition and singular point acquisition. Compared with wavelet decomposition, the advantage of LP decomposition is that only one band-pass image is generated for each layer in the case of high-dimensional, which avoids scrambling. In addition, the LP decomposition can get a tight frame with frame boundary 1, which is one of the important basis for the combination of Contourlet transform and compression perception theory. Since the LP decomposition is oversampled, the second step of the Contourlet transform is to decompose. The initial direction filter bank is to adjust the input image with a plum-shaped filter and a diamond-shaped filter, but the algorithm is more complex. Therefore, the proposed method has a new direction of a filter group structure based on the literature [5]. The structure uses two modules to simplify the filter

A REVIEW ON PARAMETERS OF CHAOS BASED CRYPTOGRAPHY IMAGE ENCRYPTION AND DECRYPTION

DHANALAXMIBANAVATH[1]SURYANARAYANALAKAVATH[2]TADISEETTYSRINIVASULU[3]
1. Assistantprofessor,DepartmentofECE,KakatiyaInstituteofTechnologyandscience,Warangal,Telangana.
2. Assistantprofessor,Det.Ofpharmacy,KakatiyaUniversity,Warangal.T.S.
3. Professor and supervisor, Department of Electronics and Communication Engineering, KU College of Engineering and Technology,KakatiyaUniversity,Waranagal-5006,Telanagana,India.

Abstract:

Chaotic encryption and decryption of images is the new process of cryptography. The chaotic encryption algorithms have been several advantages over the traditional encryption algorithms like high security, speed, reasonable computational overheads and computational power. These algorithms use the chaotic system properties like loss of information and are sensitive to initial condition. Several chaos-based encryption methods have been proposed and discussed up to date. In this paper obtain higher performance; these methods take benefit of the more and more complex behavior of chaotic signals. We contribution by comparing and analyzing the performance of the previous chaotic image encryption and decryption methods and it may be helps to yung andnew research in the area of chaos securityofimages.

Keyword: Chaotic, Cryptography, Image, Encryption and decryption

1. INTRODUCTION

In past several years, the exploitation of computer networks has grown extremely, and this development continues till date. Roughly all networks are being installed, interconnected, and connected to the global internet. Ultimately, a lot of information has been transmitted over the internet. The information includes text, audio, image, and other multimedia data. In this paper, we only concentrate on images that have been widely used in our daily life. As we extensively used the images, the security issue of the images should be concerned. For example, it is important to shield the outline of army emplacements, the statistics of bank building construction, medical images and the important data captured by military satellites. Along with this, the number of computer crimes is alsoincreased recently. Thus, image security has turn out to be a significant topic in the contemporary computer world.

Conventional encryption schemes like simple-DES, triple-DES, RSA, IDEA, AES are not appropriate to make cryptosystems for digital images, this is because of intrinsic features of image data; like bulk data capability and high redundancy. For encrypting the digital images data, plenty of encryption schemes have been proposed [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18].In the majority of the capable image encryption techniques, many researchers utilized chaos systems to accomplish the demand of reliable and secure protection / storage/ transmission of digital images through public networks. This is due to the verity that the chaotic signals have cryptographically enviable features such as high sensitivity to initial conditions/parameters, long periodicity, high randomness and mixing [8]. These features (or properties) make chaos-based image cryptosystems tremendous and robust against statistical attacks. The properties like high randomness, balanced-ness, confusion and diffusion needed in conventional cryp to graphic algorithms are achieved using states of chaotic maps obtained on iterative processing.

2. CHAOSANDCRYPTOGRAPHY

Chaos is an apparent fact that occurs in nonlinear definable systems sensitive to initial conditions and has a pseudo-random action.

S. No	Name of the faculty	Conferences
		Conference Proceedings
1	Dr. K. Ashoka Reddy	1)Dr. B. Rama Devi, Dr. K. Ashoka Reddy, Amreen Tabassum, and Md.Abdul Muqueem,"*Innovative Light Management System For Outdoor Applications* ", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020. 2)K. Ashoka Reddy, B. Rama Devi, E.Susmitha, and D.Santhosh Kumar,"*Authentic User Based Luminary Intensity Control System*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
2	Dr. G. Ragotham Reddy	1)Ramudu Kama, A.Srinivas, N.C.Santosh Kumar and G. Raghotham Reddy "*An Efficient Segmentation of Biomedical Images using Optimized Level Set Method via Enhanced Possibilistic FCM Clustering*" has been accepted after the peer review, for the oral presentation in the "International Conference on Smart Data Intelligence (ICSMDI 2021)", organized by Kongunadu College of Engineering and Technology, Tamil Nadu, India on April 29-30, 2021 and further proceedings in ELSEVIER-SSRN Digital Library. 2)Ramudu Kama, Ganta Raghotham Reddy, S.P.Girija , and A.Srinivas, "*Segmentation of Remote Sensing Images using Fuzzy Gaussian Mixture Level Set (FGML) Method*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
3	Dr. B. Rama Devi	1)Dr. B. Rama Devi, Dr. K. Ashoka Reddy, Amreen Tabassum, and Md.Abdul Muqueem,"*Innovative Light Management System For Outdoor Applications* ", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020. 2)K. Ashoka Reddy, B. Rama Devi, E.Susmitha, and D.Santhosh Kumar,"*Authentic User Based Luminary Intensity Control System*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
4	Smt S.P Girija	1)Ramudu Kama, Ganta Raghotham Reddy, S.P.Girija , and A.Srinivas, "*Segmentation of Remote Sensing Images using Fuzzy Gaussian Mixture Level Set (FGML) Method*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
5	Sri E Suresh	1)V.V.Reddy, A.Vijaya, E.Suresh, and M.Raju, "*Half-circled Fractal Boundary Linearly Polarized Triangular Patch Antenna for Wireless Applications*" , 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
6	Smt A. Vijaya	1)V.V.Reddy, A.Vijaya, E.Suresh, and M.Raju, "*Half-circled Fractal Boundary Linearly Polarized Triangular Patch Antenna for Wireless Applications*" , 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.

7	Dr. M Raju	1)Vani Turupati, Raju Manda, K.Sowjanya, and A.Pavan, "*Intereference Aware Efficiency Maximization in 5G Ultra Dense Networks*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
8	Dr. V. Venkateshwar Reddy	1)V.V.Reddy, A.Vijaya, E.Suresh, and M.Raju, "*Half-circled Fractal Boundary Linearly Polarized Triangular Patch Antenna for Wireless Applications*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
9	Sri B komuraiah	1)B.Komuraiah, V.Raju, L.Meghana Florence, and M.S.Anuradha ," *A Microstrip Patch Antenna Design with Two Ground Slots for 5G Mobile Applications*" 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
10	Sri A Srinivas	1)Ramudu Kama, A.Srinivas, N.C.Santosh Kumar and G. Raghotham Reddy "*An Efficient Segmentation of Biomedical Images using Optimized Level Set Method via Enhanced Possibilistic FCM Clustering*" has been accepted after the peer review, for the oral presentation in the "International Conference on Smart Data Intelligence (ICSMDI 2021)", organized by Kongunadu College of Engineering and Technology, Tamil Nadu, India on April 29-30, 2021 and further proceedings in ELSEVIER-SSRN Digital Library.
11	Dr K Ramudu	1)Ramudu Kama, A.Srinivas, N.C.Santosh Kumar and G. Raghotham Reddy "*An Efficient Segmentation of Biomedical Images using Optimized Level Set Method via Enhanced Possibilistic FCM Clustering*" has been accepted after the peer review, for the oral presentation in the "International Conference on Smart Data Intelligence (ICSMDI 2021)", organized by Kongunadu College of Engineering and Technology, Tamil Nadu, India on April 29-30, 2021 and further proceedings in ELSEVIER-SSRN Digital Library. 2)Ramudu Kama, Ganta Raghotham Reddy, S.P.Girija , and A.Srinivas, "*Segmentation of Remote Sensing Images using Fuzzy Gaussian Mixture Level Set (FGML) Method*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
12	Dr V Raju	1)B.Komuraiah, V.Raju, L.Meghana Florence, and M.S.Anuradha ," *A Microstrip Patch Antenna Design with Two Ground Slots for 5G Mobile Applications*" 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.

13	Sri A Pavan	1)Vani Turupati, Raju Manda, K.Sowjanya, and A.Pavan, "*Intereference Aware Efficiency Maximization in 5G Ultra Dense Networks*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
14	Dr K Sowjanya	1)Vani Turupati, Raju Manda, K.Sowjanya, and A.Pavan, "*Intereference Aware Efficiency Maximization in 5G Ultra Dense Networks*", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
15	Smt E Susmitha	1)K. Ashoka Reddy, B. Rama Devi, E.Susmitha, and D.Santhosh Kumar,"*Authentic User Based Luminary Intensity Control System"*, 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
16	Mr Md Abdhul Muqueem	1)Dr. B. Rama Devi, Dr. K. Ashoka Reddy, Amreen Tabassum, and Md.Abdul Muqueem,"*Innovative Light Management System For Outdoor Applications* ", 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.
17	Sri D Santhosh Kumar	1)K. Ashoka Reddy, B. Rama Devi, E.Susmitha, and D.Santhosh Kumar,"*Authentic User Based Luminary Intensity Control System"*, 4th International Conference on Data Engineering and Communication Technology (ICDECT-2020) is held on September 25 & 26, 2020.

Innovative Light Management System for Outdoor Applications

Dr. B. Rama Devi[1], Dr. K. Ashoka Reddy[2], Amreen Tabassum[3], and Md.Abdul Muqueem[4]

[1,2,3]Department of Electronics and Communication Engineering,
Kakatiya Institute of Technology and Science, Warangal, Telangana, India
ramadevikitsw@gmail.com[1]
kareddy.iitm@gmail.com[2]
amreentabassum1996@gmail.com[3]
mq.ece@kitsw.ac.in[4]

Abstract. Outdoor luminaries' management is one of the prominent areas for smart cities that improve the living standards of the citizens by reducing the emission of CO_2, energy consumption, and cost. In this paper, a motion detection (MD) based outdoor luminary intensity control system using sensors is proposed. This prototype designed controls luminary intensity during night time using different intensity control and especially at midnight time it operates in motion detection mode using sensors and saves a lot of power wastage. It supports motion detection of high-speed vehicles on highways up to 120kmph or more. The prototype is designed by using simple combinational circuits, integrated with renewable energy sources, and consumes less power.

Keywords: Energy, LED, Luminary, light intensity, motion detection, ultrasonic sensor.

1   Introduction

The outdoor luminaries require 19% of bulk energy and ¾[th] demand of the bulk load [1, 2]. In a European Country, electricity cost per 1 lakh population is around 1-3M$. In India, 35 million street lights consume 3,400MW power /year, which is 18% of the total energy consumption of the world [3] and emits 1.6 billion tons of CO_2 per annum.

Most of the countries adopting Smart street lighting (SSL) to reduce costs, CO_2 emission, and glare, which improves visibility. It also improves energy efficiency, luminary lifetime, quality of life, citizen's comfort, and security.

Authentic User Based Luminary Intensity Control System

K. Ashoka Reddy[1], B. Rama Devi[2], E.Susmitha[3], and D.Santhosh Kumar[4]

Department of Electronics and Communication Engineering,
Kakatiya Institute of Technology and Science, Warangal, Telangana, India
kareddy.iitm@gmail.com[1], ramadevikitsw@gmail.com[2], esu.ece@kitsw.ac.in[3],
ds.ece@kitsw.ac.in[4]

Abstract. In this work,authentic user-based outdoor lighting control technique is proposed. This technique controls outdoor light intensity based on different time zones and as well as by authentic user. The designed prototype will run in two modes: (i) Autorun self-test mode, and (ii) Normal working mode. The normal working mode is used for infield light intensity control and supports two different modes, (i) timer mode, and (ii) external authentic user control mode. The working condition is examined, the results observed are satisfactory for the timer & authentic user control in normal mode, and autorun self-test mode.It promotes the modern technologies in the world and improves the living standards of rural and urban citizens.

Keywords: Energy efficiency, intensity control, LED array, Luminary, Solar panel.

1   Introduction

Street lighting is a ubiquitous utility. The heavy financial and environmental burden usıng outdoor ligting can be reduced by minimizing energy consumption.In modern cities and highways, the lights are replaced with low energy consumption street lights like LEDs. It will reduce energy consumption, still inefficient as most of the lights are "ON" during the midnight time when there was no traffic too. Most of the street lights are 'ON' and half of the energy wasted during late-night hours. Light dimming during non-traffic hours avoid energy wastage and supports the safety of citizens. Light dimming can be useful in highways. On highways, traffic density-based adaptive outdoor light intensity control using wireless networks or software protocols can be adapted to support real-time traffic requirements. The cost for such implementation is too high and requires wireless network connectivity on highways.

The main aim of this proposed work is to develop a luminary intensity (LI)

An Efficient Segmentation of Biomedical Images using Optimized Level Set Method via Enhanced Possibilistic FCM Clustering

Ramudu Kama, A.Srinivas, N.C.Santosh Kumar and G.Raghotham Reddy

KakatiyaInstitute of Technology and Science, Warangal, Telangana, INDIA

ramudukama@gmail.com, srinivasazmeera85@gmail.com, ncs.cse@kitsw.ac.in and grrece9@gmail.com

Abstract—the important aspect to deal with medical images is image-segmentation. Image-segmentation is the way to remove the vicinity of attentiveness using different image segments. This segmentation helps to analyze the representation of the image more efficiently. The segmentation of the image in medical image analysis is taken as a challenging task because it is concerned with numerous clinical applications. To have a segmentation of colonoscopy images, cardiac vascular, knee image and MRI (Magnetic Resonance Imaging) brain images', a new approach in this paper is put forward by combining the particle swarm optimization (PSO) and enhanced possibilistic Fuzzy C-Means algorithm. The proposed algorithm proceeds in two stages: In the first stage, optimum pixel values are calculating automatically from the input medical images by using the PSO algorithm. These optimum pixels are acted as a random cluster centers for enhanced Possibilistic Fuzzy C-Means (EP-FCM) clustering algorithm. This process improves the clustering efficiency because of optimum random clusters are choosing instead of normal cluster centers. Segments obtained in the pre-processing are incoherent and highly noisy in clustered results. Therefore, Post-processing is necessary to effectively reduced the noise and boundary leakages (outliers'). In the Second Stage,it is necessary to refine the segmentation results in the pre-processing stage by using the level-set method for robustness. In this paper, tested proposed segmentation algorithm on medical images such as MRI brain and CTColonoscopy images. The performance of the algorithm is proven to be outstanding with the best accuracy and has dealt with noise effect, boundary leakages effectively.

Keywords—Image segmentation, Enhanced possibilistic Fuzzy c-mean algorithm, particle swarm optimization, level sets and medical images.

1. INTRODUCTION

The efforts in handling medical images are drastically improved, impacting the sector of drugs, where the projections and visualizations associated with images of distinct modalities like resonance Imaging (MRI), computerized tomography (CT), and colonoscopy became sophisticated thanks to efficient region extraction of such anatomical structures. Medical image segmentation deals with tissue volume measurement, extraction of anatomy structures, pathology visualization, and tissue classification [1].

MRI is one among the developed imaging techniques also as a sensitive method that detects brain abnormalities. This method records brain images better than CT with superior contrast between various soft tissues. The target of segmentation is to separate various tissues from each other through the extraction of identical features. The segmentation of MRI's brain image is based on eight categories as been mentioned in [2]. These approaches are thresholding, region growing, classifiers, clustering, Artificial Neural Network (ANN), field model on Markov random, approach on atlas guided, and de-transferable models. Image segmentation using thresholding wasn't satisfactory in medical imaging. because of the high dimensionality of the image relative to smaller sample sizes direct estimation of the statistical variation of the complete volumetric image was challenged, vascular segmentation wasn't easily possible and automatic reconstruction of cortical surface was also the foremost challenging problem within the analysis of human brain resonance Imaging [3].Performance of those medical image segmentation techniques are often improved within the future by incorporating more images from healthy subjects into the models, by the planning of latest sequential combinations of various methods, for more optimization algorithms are often added in pre-processing and to refine the earlier stage results, it's necessary to use the level set methods, deep learning methods, etc utilized in post-processing. Finally, many hybrid algorithms to be utilized in both stages can improve the performance of image segmentation, especially in medical images [4-8].

Segmentation of Remote Sensing Images using Fuzzy Gaussian Mixture Level Set (FGML) Method

Ramudu Kama[1], Ganta Raghotham Reddy[2], S.P.Girija[3] , and A.Srinivas[4]

Department of ECE, KITS, Warangal, Telangana, India

{ramudukama, grrece9, spgirija}@gmail.com srinivas_azmeera@yahoo.com

Abstract- By the growing extent and difficulty of remote sensing image information and the problems that are encountered during the cutting-edge of data handling, a progress of large-scale image segmentation investigation algorithms was impotent to encounter the essential for approaches in order to raise the final correctness of foreground recognition of an object. Consequently, the improvement of imaging methods which are large-scale stances a prodigious challenge today. Traditional image segmentation algorithms obligate high temporal difficulty and low segmentation accuracy due to absence of spatial information and the occurrence of noise. Traditional level set segmentation approaches such as Chan-Vese, Mumford Shah and the active contours without edges suffers with non-homogeneity and high intensity noise by increased temporal complexity as well as low segmentation precision. To overcome the difficulties which are occurred in traditional methods, here in this paper we introduced a novel hybrid approach which combines the fuzzy region as well as Gaussian mixer model using a level set method, which is called "Fuzzy Gaussian Mixer Level set (FGML) algorithm for large scale remote sensing image segmentation. This algorithm uses a Gaussian mixture model to describe an amount of non-similarity for the pixel class attribute. This procedure meritoriously eradicates the impact of noise on the segmentation outcome by execution extremely accurate suitable of the data with a statistical distribution. Additionally, we introduce competition in the fuzzy region to express the neighborhood prior probability to be considered as the weight of the Gaussian constituent. Results of segmentation are occurred by using Fuzzy Gaussian Mixer model suffers with outliers and boundary outflows problem. These complication remain overcome through the level set method to enhance the segmentation results. This procedure increases the robustness of image segmentation for large scale remote sensing images. Lastly, we acquired the image data from NASA's Earth Observatory and accompanied the tests; Experimental result's confirmation that, this new approach is useful one, effective and it could attain exceedingly accurate results of segmentation with less time complexity over existing approaches.

Keywords: Image segmentation, fuzzy region competition, Remote sensing images, Gaussian mixture model and level set segmentation.

Half-circled Fractal Boundary Linearly Polarized Triangular Patch Antenna for Wireless Applications

V.V.Reddy[1], A.Vijaya[2], E.Suresh[3], and M.Raju[4]

[1,2,3,4]Department of ECE, KITS warangal
{vvr.ece, av.ece, es.ece, mr.ece}@kitsw.ac.in

Abstract.A novel half-circled fractal boundary triangular patch antenna is presented. The fractal geometryis employed at the boundaries of the triangular patch.It is noticed that, the operating resonance frequency decreases as the indentation radius of the fractal curve increases. The simulation results are carried out for 1st iterationorder of Half circled fractal curves. The comparison between simulation and measurement results are demonstrated.

Keywords: Half-circled, fractal, iteration order.

1   Introduction

Microstip antennas are thoroughly investigated in the last two decades due their lost cost, light weight characteristics. A truncated tip equilateral triangle microstrip antenna is proposed by Chia Luan Tang [1]. Wen-Shyang chen et al have described a patch antenna with bent slots [2]. A size reduction of 50% is claimed with these inserted slots on the patch. An equilateral triangular patch with inserted rectangular or cross shaped slot is demonstrated by Jui-Han Lu et al [3]. By varying the dimensions of the cross slot, several antennas are designed. A size miniaturized design of microstrip antenna with single coaxial probe feed is reported by J S Row et al [4]. Various antennas with different slot lengths are designed and studied. Another method to design microstrip antenna is nominated by Xihui Tang et al [5]. Theslotted square patch antenna at the diagonal corners comprises of two sets of vertical right-angle bent stubs. Fan yang et al have examined E shaped antennas for wide band linear [6] and circular polarization [7] operations using single layer and single probe feed mechanism. In this paper, a single band linearly polarized half-circled fractal boundary antenna is examined.

Intereference Aware Efficiency Maximization in 5G Ultra Dense Networks

Vani Turupati[1], Raju Manda[2], K.Sowjanya[3], and A.Pavan[4]
Department of Electronics and Communication Engineering,
Kakatiya Institute of Technology and Science, Warangal, Telangana, India
vaniturupati@gmail.com[1], mr.ece@kitsw.ac.in[2]
ks.ece@kitsw.ac.in[3], ap.ece@kitsw.ac.in[4]

Abstract. Spectrum efficiency and Energy efficiency can be developed by using the ultra dense networks. Although, because of scalability and intrinsic densification , the interference avoidance and sustainable designs are become more composite. The more collaboration opportunities exist between them because of number of small cells are arranged. by using increasing of the EE presentation with small offering of SE,we can find the nash bargaining CE2MG and also we calculate the connection among EE and SE.it can depends on the nash product maximization problem. To increase the EE presentation with and without limitations of SE. we can attain the closed form of sub-optimal SE. finally , we calculate the numerical results for the better performance of energy efficiency and courtesy of CE2MG by presenting the CE2MG algorithm.
Keywords: Energy efficiency (EE); Spectrum efficiency (SE); Ultra-dense networks; Cooperative game.

1   Introduction

The advanced generation of telecommunication system is experiences new problems due   to improving & increasing efficiency 5G allow both the SE and the EE. To make greater network density is consider as one of the powerful paths to together improve the quality of them in advantageous manner. In whatever way, the incredible technical challenges brings by the radical concentrated distributed of minimum number of cells e.g., Interference. According to keep away from the single distortion and enlarge the SE several useful action of interference control were announced for e.g., additional asymmetrical and large amount of several useful action of interference control were announced for e.g., additional asymmetrical and higher gains of the signal distortion is reducing by the large amount of distribution of minimum number of cells.

A Microstrip Patch Antenna Design with Two Ground Slots for 5G Mobile Applications

B.Komuraiah[1], V.Raju[1], L.Meghana Florence[1], and M.S.Anuradha[2]

[1]Department of ECE, KITS,Warangal, TS, India
{kvvkomraiah,rajureddyv, megha.erza}@gmail.com
[2]Department fo ECE, AU College of Engineering for Women, AP, India
radhamsa@gmail.com

Abstract. In this paper we proposed a microstrip patch antenna with two rectangular ground slots for 5G mobile applications. This antenna has dimensions 2.69mm x 4.55mm and with less space occupation is suitable to 5G mobile applications in the current world. The two ground slots are used for better impedance matching, since; the better impedance matching gives better results (return loss, VSWR, gain, and radiation). The proposed design has an improved return loss of -23.17dB and gain 6.92dB. We have taken FR4 Substrate and created a two rectangular ground slots at an operating frequency of 38GHz in this paper.

Keywords: microstrip patch, 5G, mobile, return loss, ground slots.

1   Introduction

From the past decade, there is a rapid development in mobile communication technology, the developed generations were from 0G, 1G, 2G, 3G, and now as users requirements are increasing, 4G is unable to fulfill the customers, as the challenges are increasing each day, a new generation 5G (5th Generation) was introduced which has high data rate to fulfill the requirements. The range of the 5G spectrum is the range of radiofrequency in the sub-6GHz and millimeter-wave frequency range which is 24.25 GHz and above.

There are two sets of frequency bands for 5G:

- Frequency range 1 (FR1) which is called as sub-6GHz range having a frequency range from 450MHz to 6GHz.;
- And frequency range 2 (FR2) which is called mmWave (millimeter-wave) having a frequency range from 24.25GHz to 52.6GHz;

For the 5G networks the peak data rates are as 20 GB/s downlink and 10 GB/s uplink.

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE:WARANGAL
(Accredited by NAAC with 'A' Grade)
(An Autonomous Institute under Kakatiya University)
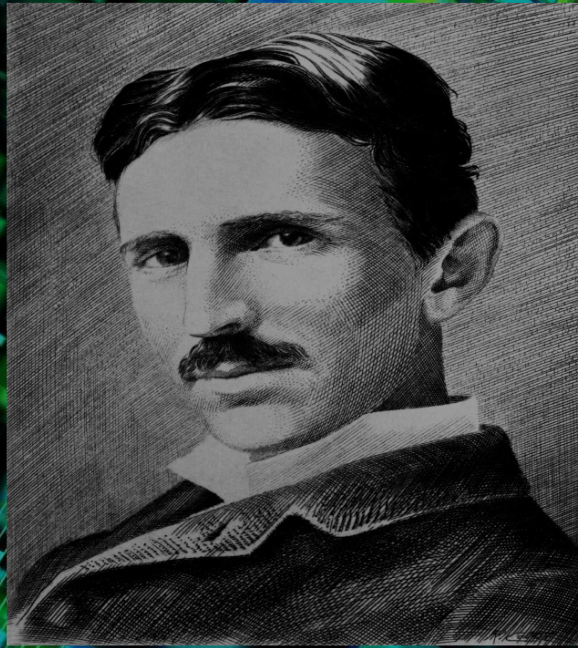
"OUR VIRTUES AND OUR FAILURES ARE INSEPARABLE, LIKE FORCE AND MATTER. WHEN THEY SEPARATE, MAN IS NO MORE."
- NIKOLA TESLA