IEEE

RSET IEEE SB NEWSLETTER '16-'17

RSET
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY

IEEE RSET
STUDENT BRANCH

> Do not go where the path may lead, go instead where there is no path and leave a trail.

- Ralph Waldo Emerson

MENTOR SPEAK

"Scientist investigate that which is already, Engineers create that which has never been"- says Albert Einstein. Science describes, Engineering does. Many of what is described as the "wonders of modern science" are often the work of an engineer. Engineers are problem solvers with an elite set of skills. They apply innovative and critical thinking with the knowledge provided by Science to solve real life problems.

Many are educated Engineers, but very few are real engineers. There is an out flux of engineers being passed out but yet a dearth of engineers remains. How does this happen? The answer is lack of quality. Engineers of quality are still a dearth in our society. This is one of the places where IEEE has time and time again showed its value and worth. The opportunities of learning and experience that IEEE provides has always filled in where academia was missing out. Producing standard engineers who actually contribute to the society has always been an aim for IEEE Student Branch.

I take this opportunity to appreciate the hard work and dedication of the IEEE execom team we have here at RSET, especially those hands that worked behind making this newsletter a success. And always remember "Strive not to be just an engineer but that of quality."

Dr. Deepti Das
Professor
Dept. of ECE
Branch Counsellor

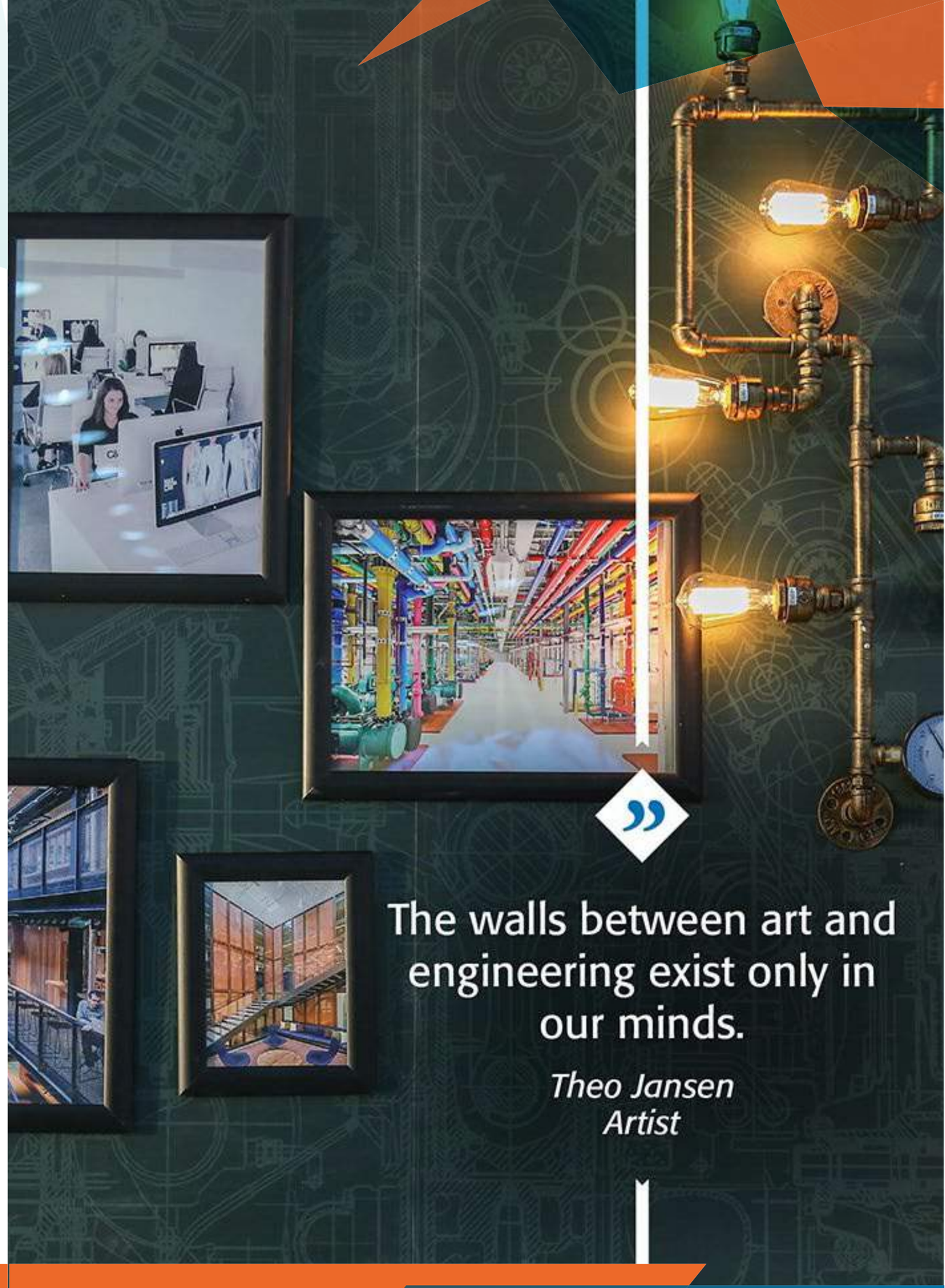
FROM THE CHAIR

When IEEE was formed the caption was " Electrons can never be out of job", it is very true, not only electrons, the subject can never be out of job. It has grown and multiplied into many branches like CSE, IT, AEI etc. All these stemed out of electronics.

It's true with the IEEE RSET student branch, we have never stopped growing, thanks to the hard work and effort of our predecessors who had strived to bring it to it's present standard. IEEE RSET student branch was never short of activities. It is always brimming with activities throughout the year at the inter and intra college level. Our members have participated in various events conducted in various parts of India. Also various competitions and workshops were conducted on and off campus and within the state. All these were the fruits of the hard work of many members as well as the guidance of teachers. All the good work and hard effort conducted and carried on by our predecessors have been successful and the baton has been passed onto us. I am privileged to hold this baton and will continue to run a good race to meet the goals and mission of IEEE RSET student branch. I take this opportunity to wish this IEEE student branch of RSET to grow forever and keep up the good work started by our predecessors.

On this happy occasion of the release of the new newsletter for the current year I take this opportunity to thank heartfully the sincere efforts done by the editorial board in making this magazine a wonderful one which will be very informative and throw some light on the good works of IEEE RSET student branch. I wish you all a wonderful year ahead with a lot of learning and growing opportunities for the old and the young at heart.

Electrons when heated never rest however hard neutrons and protons try to pacify it, so are we when we are heated with the ambition to learn, achieve and grow.



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EVENTS

NCIOT Logo Designing Contest

Better interaction between Technical institutions and industry is the need of the hour. This will have great bearing on the Engineering Curriculum, exposure of industrial atmosphere to engineering students and subsequent placement of young graduating engineers in industries across the country. These objectives can only be achieved well by bridging the gap between industry and the academic institute.

Rajagiri Institute of Future Technology (RIoFT) is an attempt on behalf of Rajagiri school of Engineering and Technology (RSET) to kick-start the next level of industry-institution interaction, whereby the industry is invited to set up their respective chairs at RSET in order that the industry can incubate their technology for future employing the creative insights of the academia. NeST Technologies Pvt. Ltd. has comeforward to be the first company to establish its Center under RIoFT for close collaborations, and this initiative is tentatively conceived as NeST Centre of Excellence in Internet of Things (NCIoT)

The IEEE RSET SB called for a design competition for the Logo for between july 8 th and july 15th.A total of 12 entries were received and the best ones were submitted for review. Some of the entries are given below.

IAS Chapter Launch

The official inauguration of the IAS (Industrial Applications Society) chapter of the RSET IEEE SB was held on the first of September 2016. The event was graced with the presence of Mr Sunil Paul who gave a very inspiring talk on robotics and microcontroller programming.

The official website of the IAS chapter was launched by the principal of RSET , Dr A Unnikrishnan. The event was jointly hosted by ELUXTRA and the IAS chapter. Mr Jebin Francis , the IAS chapter advisor declared the office bearers for the academic year.

Ms Arbite John is the chairperson of the chapter and Mr Rohit V is the co-chair. Ms Kavyasree M is the secretary and Mr Abhinav is the Webmaster and Networking Head. HOD of EEE department, Mrs Shanthi B also declared the office bearers of ELUXTRA. Mr Mithun Joy of EEE gave the welcoming address. The principal, Dr A Unnikrishanan gave the presidential address and an overview of the importance of IEEE in improving the overall performance of a student and how it gives greater exposure to a student outside the academic zone.

Arbite John talked about the IEEE IAS society and gave an introduction to the students about it. The benefits of being a member was dicussed and also an overview of the working of IEEE. Also an introduction to our alumni and mentor, Mr Libin who is a very active member of IAS internationally was also given. Also, a sneak peek into our latest assignment was also given to the students and teachers.

Mr Sunil Paul, CTO of Srishti Robotics and cofounder of Techjeeva, who also is the HOD of the Innovation and Design Lab at Choice School, Thripunithara was the chief guest. He was an assistant professor of ME department at Vimal Jyothi Engineering College. The talk he gave was very inspiring and he also showed a few videos that inspired everyone to start working on their own projects and make their own startups. He shared his experience with the children at the school and highlighted on how students lose their intuitiveness as they grow. He also showed a sample program to light up LEDs on a Arduino Uno R3 board leaving a specific time interval. He also introduced the audience to his robot “chitti” and demonstrated the different statures that his robot can take.

The program concluded with a vote of thanks by Ms Kiran Maria Abraham.

PES ENERGY EFFICIENT DREAM-HOME CONTEST

Energy efficient dream home contest jointly organized by IEEE PES and EMC Kerala for the Kochi hub level was conducted in RSET Kakkanad on 1st October 2016 from 10.00 am to 4.30 pm. 24 teams had participated from different colleges across Kochi, out of which 6 teams were selected for the state level competition. Two teams from RSET had participated for the competition. Anika Tomichen, Greeshma Ranjeev and Anushreya Preshob had presented their idea based on the topic of energy efficient switch and water management. Anjali Biju, Aishwarya KP and Akshaya presented their idea on the topic low cost LED Drivers for efficient lighting. A panel of three judges constantly evaluated the performance of each group and contributed opinions in improving their ideas.

PES QUIZ COMPETITION

RSET IEEE SB in association with IEEE PES KERALA SECTION organized a quiz contest for first year engineering students as part of IEEE day celebrations on Oct 4th during the lunch interval in all the engineering colleges of Kerala. A total of 35 students participated for the event. Quiz contest carries 40 questions and longed for 20 minutes.

Winners & runners up were qualified for the finals at hub level to be conducted on Nov 5th. All participants were awarded 10 activity points for the college level contest. For hub level more activity points will be awarded. Winners at hub level will be awarded prize money of 10K as first prize, 5K for second and 3K for third position.

IEEE DAY CELEBRATONS 2016

As part of the IEEE day celebrations, 2016 several competitions and the PES college-level quiz was conducted. The competitions that were conducted are:

Photography contest
Students were asked to send in photos, that they've clicked based on the theme "Empowering Technology for Humanity". This competition saw a lot of students sending in their entries, to bag the top three places.

Technical Blogging competition
Students were asked to mail in, their own blog entries on the topic "Empowering Technology for Humanity".

The best entries from both the competitions gets featured in the IEEE RSET SB Newsletter.

WINNERS

Jeffin George Johnson
S3 ECE- BETA

P R Hari Kamath
S5 CSE Gamma

EMPOWERING TECHNOLOGY FOR HUMANITY

- Kevin Thomas S3 IT

Thomas Nathaniel once said," **The evolution of technology has left us astounded, expectations of unexpected interventions are rising and what technology offers to humanity is next-level unpredictability."**

There were times when humans were happy to rub stones and produce fire, times when a letter was the only long-distance-alternative, times when idea that, circular things could act as rollers was the biggest discovery and then came the industrial revolution. Technology has reached a level where it's capable of taking human life to the next dimensional world. Technology has provided solution to almost all issues and continues to do so.

If it's too hot, you have an AC and refrigerator and if it's too cold you have a heater. Solutions are endless. Why? Because of the ever increasing versatility of modern day technology.

The robots have gone on to replace humans in the working sector. They are capable of taking up the loads that humans can't. What seemed impossible has been made possible by what is called as TECHNOLOGY'.

Tell someone in early 19th century that they could go from Australia to Greenland in a matter of few hours and they will laugh at your statement. Today you know that it's a truth. The existence of mails, social media that connects people all over the world, the whole network of Internet, current transport systems, when com-

pared to our past existence, are a few things that have made us believe in the impossible. What's more to come? The answer isn't fixed but surely bounds to amaze us.

Life has never been as comfortable to anyone else as it has been to the Y2K Generation. And as we move forward, it's only going to get bigger, in terms of the luxury and comfort.

Medical sector which was once the most questionable, is now amongst the most reliable due to the intervention of new technologies and improved growth in electronics and applied instrumentations and it will only get better with so much research going on in the field. Dr. Shane Paul of Ohio University expects life span to increase to 79 years for the humans, irrespective of all the modern day issues, purely based on the advancements in medical sector.

Time is no longer an entity to worry about because technology has increased the work efficiency rates and thereby, reducing the time required.

In this Techno-Savvy world, technology has motivated humans to be the better versions of themselves, overcoming all their shortcomings and believing in themselves. The Mechatronic Industry, which combines the mechanical, electrical and electronic industries has gone on to help the paralyzed and debilitate through Bio-Mechatronics where we integrate mechanical parts with a human organ and hence, re-ignite their belief in life.

As we go ahead, I believe, technology can overcome our biggest need of the hour, 'Curtailing the gap between the rich and the poor.' The more exposed the developing nations become to technology, the more closer they'll get to being developed. It's a huge task and a very difficult one but Technology has the latent to make it happen. The world is a global village now, all because of emergence and application of technology everywhere.

Unlike yester times when things happening were a matter of probability, technology has brought with it accountability and transparency in the everyday happenings. There is a greater assurance that whatever happens every day with these technologies, will work out, for sure.

Everything will be better in the coming times. It's not just a thought or an abstract hope but a rather pragmatic approach.

Why?

Because Technology has always had answers to our ever increasing needs and wants and yet keeps us unsatisfied because it's true potential can never be limited.

It will continue to find solutions to our queries and human life would continue to be empowered with presence of technology in our lives.

The Mantra is simple :
Empower Technology to Empower Humanity!

ENGINEERING IN INDUSTRY

The IAS chapter of Rajagiri IEEE student branch on 10th March 2017, Friday conducted a session on Engineering in industry. The talk was held at Gallery Hall from 9 am to 4 pm. Around 120 students were a part of this event.

The first session was handled by Mr. Anish Francis currently working as assistant engineer in KSEB. The talk was based on the concept of "Grid and Artificial Intelligence". Because of the advancement of technology, electricity has advanced and man utilizes it to achieve his goals in life. Mr. Anish spoke on how things work in Kerala State Electricity Board and about his contributions towards the society as an engineer.

After a tea - break, next session was held on the topic "From here to Career" led by Aswin Shibu, director of Sales at FullContact Inc . He talked about how engineers should make themselves employable. He shared to us his experiences and about how should students build up expertise in their fields of interest. He highlighted the importance of staying informed and being aware of the current trends and requirements. Prepare, Grow & Build were definitely the words to be taken along.

Later, after networking and lunch, Mr. Jibin Sabu, working as partnership developer at Fullcontact, took last session of the day which was on how to utilize the opportunities available to us. He briefed us on the art of writing e-mails. Mr. Sabu shared with us the importance of taking a chance and saying yes to experience. He asked us to go forth with an intention to learn, to experience and to enjoy.

The workshop came to an end with Ms. Santhi B, HOD EEE department, handing over the mementos to the esteemed speakers.

DESIGNING WORKSHOP

A Designing workshop was conducted by RSET IEEE SB in the CAM/CAD lab on 11th of March, 2017 from 9.00 am till 12.30 pm. The workshop was taken by Balu Raj and Megha Ben of IEEE Computer Society, India Council. The class was attended by 30 students who got hands on experience and training of the designing software – adobe illustrator CC. A poster designing competition was also held after the workshop.
A brief introduction about IEEEmadC – Mobile Application and Development Contest and its benefits was also given after the workshop.

Virtual Reality

-Rohit Venugopal

Ever since the release of Pokemon GO, almost everyone now knows about the field of Augmented Reality. What Augmented Reality does is, it takes the real world and projects digital imagery and sound into, thereby modifying our perception of reality.
But you cannot discuss Augmented Reality, without first discussing Virtual Reality. Almost everyone now must have heard about Virtual Reality. While AR projects digital imagery onto the real world of present, Virtual Reality immerses your senses completely in a world that exists only in the digital realm. By doing this, it modifies our perception of reality, and lets us experience things, which we normally couldn't have.

How is VR possible?

To implement Virtual Reality, developers across the world make use of computer technology and devices such as, headsets, special gloves and omnidirectional treadmills, all of which together may be used to stimulate our senses, to create an illusion of reality.

Applications of VR

As of today, many big companies, including, Google, Facebook, HTC, and many others, are currently working on VR, to try and advance the field. The applications of VR are numerous and not just related to the entertainment and gaming fields. It can also be used for healthcare, science and many other fields. We could also say that the applications of VR are in fact endless.

One such important application could be for medicine and healthcare. New trainee doctors can learn about the human body through virtual environments, and learn more through just x-rays and other scans. Another important application could be to design various automobiles and aircrafts, in the virtual world, to see if it works, before building it in real life.
The use of VR can even help people with problems in life, illness, or less money, to travel around the world and see everything with their own eyes. One could possibly even travel into the cosmos, and witness the Milky Way Galaxy in its breath-taking beauty.
Assessing VR systems
Virtual Reality has a wide range of applications from gaming and entertainment, to medicine, engineering, military treatment. But as with any technology, the issues of usability arise.
The problem is that existing usability guidelines are applicable only for computers and other devices in which a user interacts in 2D.
But Virtual Reality is a 3D system, which enables users to interact with objects in a computer-generated system utilising their senses. The aim is to generate an experience, so vivid and realistic, that it is indistinguishable from the real world.

How does Virtual Reality affect us?

But while VR seems to be offering a lot, it also does have a few drawbacks. The question arises of how will VR affect us. One of the main noticed problems was that, some people were affected by motion sickness. It is not uncommon for people to suffer from nausea after spending time in a Virtual Environment. This may possibly be due to the shift of perception we go through.
Another major problem which arises is the possible relationship between Virtual Reality and desensitisation. Desensitisation means that a person is no longer affected by extreme violence and gore, since they may see it very commonly in VR games, and as such, even in real life, they may fail to show empathy or compassion when the time comes. In some cases, they may even seek out such a situation in Real Life, for the adrenaline rush and sense of power.
Another issue is, in case you are hurt in the virtual environment, we do not know how it will affect us in the real world. Whether we will feel pain, distress and other emotions is yet to be found.
These are some of the problems associated with the rise of Virtual Reality.

Conclusion

We can definitely see a rise in Virtual Reality. There are already plenty of gear related to VR that has been released, and every day, more and more applications and videos, are being released which offer users a chance to immerse themselves in a virtual world. The technology is becoming cheaper and cheaper, and in some near future, we can expect to see more innovative uses for it, to alter the way we live and experience life.

WIE MANNEQUIN CHALLENGE

As a part of International Women's day celebrations, RSET IEEE-WIE hosted an inter college mannequin challenge on 12th of March, 2017 with deadline being 17th march,2017. The theme for the same was 'LIFE AT YOUR CAMPUS'. Multiple entries were received out of which RSET bagged the first place with a cash prize of Rs.2000.

WIE QUIZ

On account of International Women's day, RSET IEEE-WIE organized a quiz competition based on women empowerment and leaders on 15th March 2017. The event was open to both IEEE and non-IEEE members. Twenty students had participated for the quiz. These students were selected on first come first serve basis. The winners were Aadith Subramanian and Navaneeth Krishnan from S6, EEE and first runner up were Adithya Prakash Pai K and Abhishek V James from S2, EEE. They were awarded cash prize of Rs.1000 and Rs.500 respectively.

CCASH AND IEEE-WIE TALK

RSET-IEEE-WIE in association with RSET-CCASH organized a talk on account of International Women's day celebrations on 16th March, 2017. The talk was given by Ms. Husna Mumtaz, Executive Engineer of KSEB and Dr. Marykutty John, Retd. Social worker, Dept of Psychology, St.Theresa's college. The event was attended by about 70 girls and few faculty members. The talk was aimed to give a precise view on the life of professional women and the challenges they face in the core sector.

Building Artificial Intelligence Units using RUST

RUST /AI WORKSHOP was conducted on 18th March 2017 by the RSET IEEE SB in association with the tech-fest Abhiyantriki 2K17.The workshop dealt with a new concept, a highly emerging programming language RUST, developed by Mozilla.

The session was handled by Mr. Vigneshwer, currently engaged as a research analyst at MuSigma ,Bengaluru, India, who is also an active IEEE alumni and Ex-IEEE chairperson.

The one-day workshop began at 10 am with around 200 participants and 15 volunteers, out of which more than 100 were inter college registrations.

The morning session of the workshop kick started with a short introduction to Artificial Intelligence. It deeply covered the topics:
Mathematics behind Artificial intelligence
Signals and Systems and Convolution
Introduction to RUST

In the afternoon hands-on session were conducted. The participants were divided into groups and they were instructed to make mathematical models using Rust. They got an exposure to many deep RUST projects. The sophisticated samples turned out to be really simple after the sessions. They learnt the skills of solving real-time learning system problems and rust.

The session ended by 4 pm, finally handing over the memento to the esteemed speaker by Ms. Deepti Das, the IEEE RSET branch councilor.

RSET IEEE SB Logo Designing Competition

An open contest was announced on 27th March, inviting entries for a new logo for the IEEE SB with a cash prize of Rs.500 for the winning entry. From all the entries received, Branch counsellor Dr. Deepti Das selected the best design and awarded the cash award to the winner.

K-MUG ACADEMIA

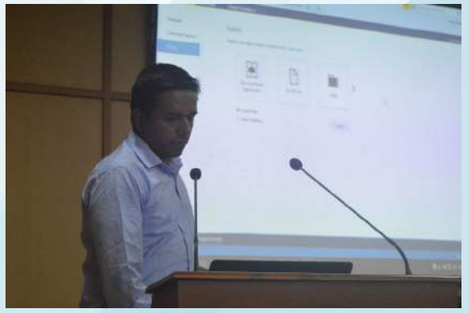
A hands-on workshop on .Net and Microsoft Azure

A hands-on workshop on .NET and Microsoft Azure, organized by IEEE RSET SB was held on the first of April 2017. Four members of the Kerala Microsoft Users Group (K-MUG) were invited as Speakers for this event.

Mr. Shalvin PD, who works as Independent .NET corporate trainer, taught the students the basics of Visual Studio and ASP .NET.

Mr. Anuraj, who is a K-MUG Community Council Member, and works as a Technical Architect with Suyati Technologies; took a class on Microsoft Azure for the students.

The other two speakers were: Mr. Praveen Nair, who heads the Technology and Architecture at ORION KOCHI; and Mr. Yanesh Tyagi, who specializes in developing enterprise level solution architecture.



The workshop was held at Rajagi-

ri School of Engineering and Technology, and as conducted by the IEEE RSET SB, in association with the Kerala Microsoft Users Group (K-MUG).
Ms. Sneha Thomas gave tan introduction about the speakers, and Dr. Deepti Das, of the ECE Department, gave the welcoming address and invited the Speakers onto the stage.

Following that, the four speakers, conducted a very informative and interactive hands-on workshop on the working of .NET and Microsoft Azure.
The event was attended by 70 students; with some of them being from different colleges. The workshop lasted from 10 AM to 4:30 PM.
The different ways of working in Microsoft Space, and also opportunities for interested students with the various Microsoft Programs were discussed. The workshop ended with the vote of thanks given by Ms. Sharon Lucas, the vice chairperson.

Artificial Intelligence in Medicine

-Kavyasree M

Artificial intelligence (AI) tools and techniques can contribute significantly in the diagnosis of disease states and assessment of treatment outcomes. This has been demonstrated in a number of areas, including: help with medical decision support system, classification of heart disease from electrocardiogram (ECG) waveforms, identification of epileptic seizure from electroencephalogram (EEG) signals, ophthalmology to detect glaucoma disease, abnormality in movement pattern (gait) recognition for rehabilitation and potential falls risk minimization, assisting functional electrical stimulation (FES) control in rehabilitation setting of spinal cord injured patients, and clustering of medical images
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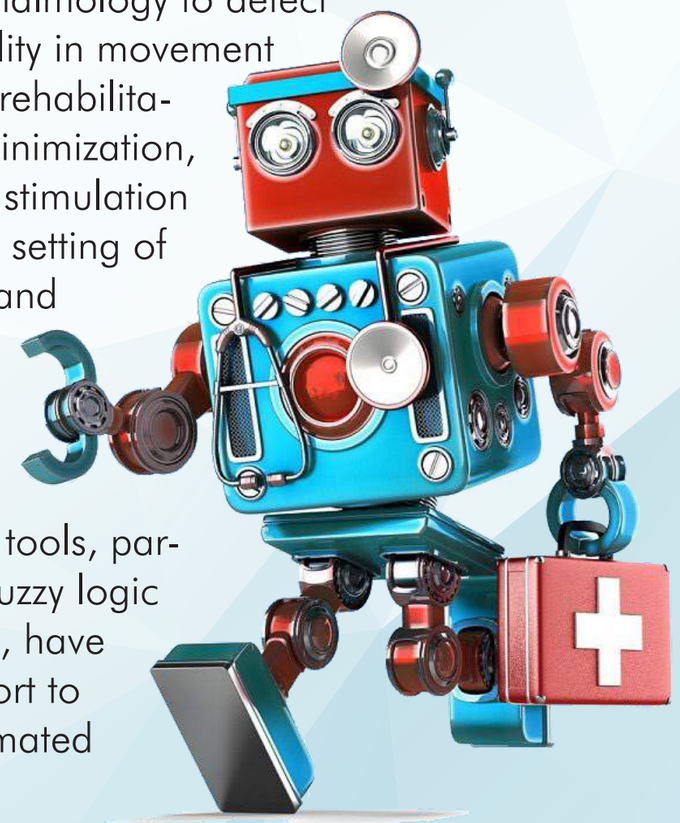

Recent developments in information technology and AI tools, particularly in neural networks, fuzzy logic and support vector machines, have provided the necessary support to develop highly efficient automated

diagnostic systems. Despite plenty of future challenges, these new advances in AI tools hold much promise for future developments in AI-based approaches in solving medical and health-related problems. This article is organized as follows: Following an overview of major AI techniques, a brief review of some of the applications of AI in healthcare is provided. Future challenges and directions in automated diagnostics are discussed in the summary and conclusion sections.

In addition to applications in medical diagnostic systems, AI techniques have been applied in many biomedical signal-processing tasks, including analysis of ECG, EEG and human movement data . Neural network models have played a dominant role in a majority of these AI-related applications in health and medicine. Many of these applications are for pattern recognition or classification. This involves feature extraction from the input data before feeding these features to the classifier for designing and developing automated classification models, and finally testing the models for generalization.

Medical decision support systems (MDSS) are designed to construct a knowledge database by way of receiving a list of symptoms as input features and their corresponding disease type(s) as the output. Such a developed symptom-to-disease mapping system then facilitates the diagnostic process by generating new responses due to a new set of symptoms. Neural networks have been used to aid MDSS. Silva and Silva (1998) developed such a neural network-based MDSS system for a relatively small set of 20 randomly selected diseases and reported encouraging results. Disease symptoms in this study were represented as sinusoidal damped waveforms. Hybridization has been shown to improve diagnostic accuracy.

Several studies have applied neural networks in the diagnosis of cardiovascular disease, primarily in the detection and classification of at-risk people from their ECG waveforms have applied neural networks to classify normal and abnormal (pathological) ECG waveforms: 500 ECG recordings (155 normal and 345 abnormal) were used to extract features from the QRS complex for training and testing the classifier. The abnormal ECG recordings had six different disease conditions. The classifier was able to recognize these waveforms with 70.9% accuracy.

AI tools, including neural networks, fuzzy clustering and SVMs, have been shown to be useful for analyzing electrical activity of the brain, the electroencephalogram (EEG) signals. Features extracted from EEG recordings of the brain have been used with AI tools for improving communication between humans and computers and also for effective diagnosis of brain states and epileptic seizures .

Neural networks have been shown to be an effective diagnostic

tool to identify glaucoma disease.
Glaucoma is more prevalent in older age and can cause loss of vision. Papadourokis et al. (1998) applied backpropagation neural network to classify normal patients and patients with glaucomatic optic nerve damage from perimeter examination. Several neural network models were tested using 715 cases, including

518 glaucoma cases, and they reported 90% recognition accuracy with two hidden layer networks and training with 80% of the input data .A self-organizing fuzzy structure has also been developed and applied to predict the onset of hypoglycemia for diabetic patients .

Gait is the systematic analysis of human walking. Various instrumentations are available to analyze different aspects of gait .
Among its many applications, gait analysis is being increasingly used to diagnose abnormality in lower limb functions, and also to assess the progress of improvement as a result of treatments and interventions. Recently, neural networks and fuzzy logic techniques have been applied for gait pattern recognition and clustering gait types. Gait analysis is being increasingly used in rehabilitation settings, and also combining with AI techniques to improve gait control and functionality.
Support vector machine (SVM) has recently been applied to classify young and elderly gait patterns. Gait changes with aging, with potential risks of loss of balance and falls. Recognizing gait patterns with potential falls risks would help to detect at-risk people so that rehabilitation programs could be undertaken to minimize the risk of falls. AI techniques such as neural networks and SVMs have demonstrated their potentials for detecting gait degeneration due to aging and appear to have potential applications in falls prevention in the elderly.

There are plenty of future challenges for AI to be routinely used in medicine and health. The use of automated medical decision support system in routine use in the clinic would make a significant impact on our healthcare system.Continued developments in AI fields are providing much impetus that is needed to tackle the many problems of the healthcare system.


designed by Glen Zachariah.