POSITRON 2K16

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ELECTRONICS & COMMUNICATION ENGINEERING

MITS

Evergreen Center For Excellence

Department
of
Electronics & Communication Engineering

POSITRON 2K16

The +ve charge

DEPARTMENT
OF
ELECTRONICS & COMMUNICATION ENGINEERING

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HIGHLIGHTS OF THE CURRENT EDITION :

* Perspectives from the Department Head
* Faculty publications
* Interview with the alumni
* Illuminatus
* Community outreach
* Trip to SHAR
* Student articles
* Student participations
* Placement updates

Dr. N Vijaya Bhaskar Choudary, M.Com, Ph.D
Secretary & Correspondent

POSITRON 2K16 offers an excellent opportunity for making each one of the students feel better of being informative and knowledge oriented. It has formed an incredible knock to from a technologically advanced and fully loaded commitment. Brace yourself with the devices which ensure you with healthy valuable returns. Warm up with ultra gaming experience and find out your carrier option. Fasten your growth, development and disseminate your knowledge at various levels. Grab the opportunities to the best of its exposure and illuminate your carrier, overcoming the odds against your efforts and endeavor. I am happy that every year the Department of ECE resolves to create a Magazine which cherishes the student's awareness in substantial making of his carrier.

Sri. N. Krishna Kumar,
M.S (U.S.A)
Chairman

With the philosophy of taking our students to the forefront of the new economy and to drive them by intellect and values, the enthusiastic faculty drawn up this magazine to their appreciation. To continue the challenging legacy of achieving excellence, I would therefore advice the students to be cognizant to multiply the knowledge. Know about the faculty, polish yourself with their help and set your minds to get holistic success. The credit for the success goes to the unprecedented dedication of the teachers and commitment of the students. In the present sophisticated world of opportunities, at the best of times and in the best of context, we are there to strengthen such contributions. I wish you all the very best.

Dr. C Yuvaraj,
Ph.D
Principal

The technological information dissemination to public is the key factor in bringing concerned people/ department together. The department of Electronics and Communication Engineering contributing best of its efforts in development of technical temper by publishing newsletter "POSITRON". The documentation of different activities and bringing it to relevant technical community is the excellent towards service of society. These activities will help in making the science and technology much stronger towards knowledge bank. I am congratulating all the ECE department staff and students on this occasion.

Dr. A.R. Reddy
Professor & Head,
ECE Department

I am happy to see one more issue of POSITRON a departmental newsletter exclusively for students and faculty. Our faculty has achieved a distinct progress in teaching to the students, and conducting research in various fields of electronics and communication engineering. This newsletter brings all about their achievements. Our students have made deep impact in the Rayalaseema region by bagging several prizes in various events conducted by Engineering Colleges. Congratulations to all the winners.

Exciting developments are taking place in the area of electronics and communication. The number of transistors are on a silicon die is ever increasing with the shrinkage of device geometry. Device sizes, as small as 22 nm, are being produced. A vertical layer is created and transistors are stacked like a "double-decker" bus to increase the transistor density.

System-on-chip is accelerating the integration of the number of functions packaged in a module. The country is wired with fiber optic cables for backbone communication network. This network supplemented with the wireless networks is connecting India for voice, video and Internet services. Lot of research is carried out to realize long range and large bandwidth cellular communication networks.

These objectives are achieved with the deployment Multi Input Multi Output (MIMO) antenna systems, and Orthogonal Frequency Division Multiplexing (OFDM) modulation. Research for developing 5G cellular products is in full swing and these products will be ready by year 2020. The 5G networks will provide 1 GB/s data rates under mobile conditions. The size of the Base Transceiver Station will be the same as that of small match-stick box. Opportunities are created with ITIR for Electronic Hardware Manufacturing (EHM) hubs. Investments will be made in VLSI, Embedded systems and other allied electronic products. It is up to the young engineer to grab the opportunity and make India rich. I wish success for all out going students of batch 2012-16.

PERSPECTIVES FROM DEPARTMENT HEAD:

Every year of Positron brings you some transcripts of the talk with the head of the department Dr. A. R. Reddy, the man leading the department for the past 6 years. The below questionnaire throws light on what is going on inside the department, and can be expected in the near future.

Q. What are the department targets for the year 2015-16?
A: As such, the department is working towards achieving a high placement record of at least 80%. This would further boost the confidence of the department and would thrust it towards excellence.

Q. How do you feel the setting up of Innovation Centre going to help the department?
A: Setting up of incubation facilities like the Innovation Centre setup in MITS this academic year is very important from the student point of view. These centres of excellence acts as platforms to help students accelerate their project works on innovative concepts and designs in line with the latest developments going on in the electronics and communication industry worldwide.

Q. What are the areas of research that the department is currently focusing on?
A: Presently the department is focussing on the fields of Image Processing, Cryptography, and Embedded Systems.

Q. Recently, the department signed an MoU with ECIL, do you want to comment upon that?
A: No Comments.

Q. What were the major outcomes of the conference on "Wireless Communication Systems"?
A: Due to these conferences, the faculty and the post-graduates get a chance to interact with the outside research community by presenting their technical papers, and getting exposed to other latest trends in the field of "Wireless Communication Systems"

Q. The department seems to house an active IEEE student club. What are the activities undertaken by them ?
A: IEEE student club played an active role in the department. It has succesfully conducted a national conference, a workshop on PCB Design and technical sysposiums like Eclectica. I wish the IEEE club all the best for the future and hope that they would keep conducting such events with the same zeal in the future.

Q. Were there any changes made in the department to benefit the students?
A: There have have been a plenty of changes in the department for the benefit of the students. Some of them worth mentioning are inroducing the students to online courses, encouraging them to undertake mini-projects, inroducting the mentoring programme and remedial classes for academically poor students etc.

Q. What is going on in the present electronics industry and how is MITS preparing its students for that?
A: I feel that the electronics industry is not performing very well. But since it has a lot of scope in the VLSI and Design fields, we are training our students to grow strong in those fields, and undertake jobs in VLSI or non-core IT fields.

**Q. Where is the department going to, and what are its current strengths?**
A: A particular strength of the department worth mentioning is the strong faculty team consisting of highly experienced professionals, 54 in number, of which 13 are PhDs. Last year there were 40 faculty publications, and the target this year has increased to 50 plus.

Q. What new can be expected from the department in the current academic year?
A: Actually a lot can be expected from the department in the current academic year. We are planning to start an in-house video lecture series for subjects like Computer Organisation & Architecture and MOOCS (Massive Open Online Courses). Also, the faculty has been encouraged to move to digital methods of teaching like ppts etc. Also in-house GATE coaching and guidance is being provided by the department faculty for the students to excel in competitive exams.

ECE DEPARTMENT FACULTY

Professors:
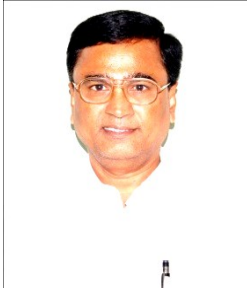
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Assistant professors:

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Mr. B. Sukumar

Mr. M. Sreenath Reddy

Mrs. G. R. Hemantha

Mr. P. R. Rathna Raju

Mr. U. Sreenivasulu

Mr. V. Sai Kumar

Mr. S. Arun

Ms. C. K. Hemantha Lakshmi

Mrs. G. Nagaswetha

Mr. G. Sambasiva Rao

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Ms. M Manjula

Ms. Reddy Rani

Supporting Staff:

Mr. C Sreenivasulu

Ms. D Sasi Kala

PUBLICATIONS – PAPERS, BOOKS

S. No.	Name of Faculty Qualification & Designation	Paper/Book Title	Journal/Publisher
1	Dr. S.A.K. Jilani Professor Ph.D.,	1). Smart Surveillance System using Thing Speak and Raspberry Pi 2) Replication and Study of Kapagene Generator	International Journal of Advanced Research in Computer and Communication EngineeringVol. 4, Issue 7, July 2015.ISSN (Online) 2278-1021 ISSN (Print) 2319-5940 International Journal of Engineering Trends and Technology (IJETT)- Volume 28 Number 3 October 2015 ISSN 2231-5381
2	S. Javeed Hussain Associate prof.	Real Time Object Counting using Raspberry pi	International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 7, July 2015 ISSN (Online) 2278-1021 ISSN (Print) 2319 5940
3	Mr. M. Jagadeesh Babu	Real Time Monitoring of Water Level Variations In Rivers and Flood Alerting System using Arm7	IJARCCE 08/2015; 4 (8):392-398. DOI: 10.17148/ IJARCCE.2015.4885 International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 8, August 2015 ISSN (Online) 2278-1021 ISSN (Print) 2319 5940

4	V.Sai Kumar, Asst. Professor	Temperature Programmable Suit using Thermoelectric Cooler/Heater	SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE)–Volume 2 Issue 7–July 2015 ISSN: 2348 –8549
5	Mr.S.Arun	Abnormal Human Activity Recognition using Scale Invariant Feature Transform	International Journal of Current Engineering and Technology Vol.5, No.6 (Dec 2015) E-ISSN 2277 – 4106, P-ISSN 2347 – 5161
6	C.K.Hemantha Lakshmi , Asst.Professor	passenger friendly transport system using zigbee as communication medium	International Journal of Engineering Research-Online Vol.3., Issue.5., 2015 (Sept.-Oct.) ISSN: 2321-7758
7	Ms.G.NagaSwetha Asst. Professor	ARM9 based driving license verification system	International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) Volume 4, Issue 8, August 2015 ISSN:2278 –909X
8	G. Samba Siva Rao Asst.Professor	Design and Simulation of Dual Band Planar Inverted F Antenna (PIFA) For Mobile Handset Applications	International Journal of Antennas(JANT): Vol.1, No. 1, 2015.

9	Mr J.T.Pramod	Interfacing and Controlling of Liquid Crystal Display with Single Board Computer for Communication Access Terminal	International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 8, August 2015 ISSN (Online) 2278-1021 ISSN (Print) 2319 5940
10	P.Sravan Kumar Asst.professor	pilgrim identification system based on rfid	International Journal of Embedded & VLSI System ISSN: 2349 8129 Volume 4, Issue 8 Aug 2015
11	B.Vamsi Krishna Assistant Professor	ARDUINO Based Wireless Security System For Coal Mining Workers	International Journal of Advent Research in Computer and Electronics (IJARCE) Vol. 2, No. 8, August 2015 E-ISSN: 2348-5523
12	Mr. U. Sreenivasulu	Automated Color Recognition System for Visually Challenged and Achromatopsia People using Arduino and Mobile App	International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) Volume 4, Issue 8, August 2015 ISSN: 2278 – 909X
13	Mr.P.R. Ratna Raju.K	An Automated ThingSpeak System representing MPU6050 Sensor data using Raspberry PI	International Journal of Engineering Trends and Technology (IJETT) ISSN:2231-5381 Volume-29 Number-1 Year of Publication : 2015 doi: 10.14445/22315381/ IJETT-V29P206

14	Mr. D.Girishkumar Asst. Professor	Home Automation through E-Mail Using Raspberry Pi	International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) Volume 4, Issue 9, September 2015 ISSN: 2278 – 909X
15	Dr. Purnima.K.Sharma	Digital Image Watermarking: An Approach by Different Transforms using Level Indicator	2015 IEEE International conference on communication, control and Intelligent Systems (CCIS). ISBN 978-1-4673-7541-2/15

TALK WITH THE ALUMNI:

"Graduation is only a concept. In real life, everyday you graduate. Graduation is a process that goes on until the last day of your life, and if you can grasp that, you will make a difference"

Talk with the alumni column provides interesting insights into what is currently going on in the electronics and communication industry, and how they tackle the everyday challenges that life offers to them after leaving the college.

E Santosh
Graduation year : 2015
Working company : Tech Mahindra
Designation : Associate Software Engineer
Location: Bangalore

Q: Would you like to share with us as to how the college helped you in realizing your dreams.
A: To be exact enough, college is a place where you can have the chance of dreaming to get the higher positions, but once you get into working environment, you come to know that you have still so much to do to get your dreams come true.

Q: What according to you is the scope of Electronics & Communication engineers in the present industry?
A: Well, scope depends on the areas of interest that you are willing to work on. As an ECE student, you get to know even about coding, which you can use to enter into a software environment with ease. For getting into a core industry, you got to have the required technical skills and show off those abilities. Also since it is very unlikely that core companies would visit campuses for recruitment, your profile has to be strong enough to get into one of them.

Q: Do you have any suggestions for the current students?
A: Sure, but take it as a guidance rather than a suggestion (we generally tend to hate suggestions by others at this age). I would only press at one point, just love what you learn, be passionate towards it, and don't give much of a preference to your JNTU percentage, rather try to acquire as much subject (which you find interesting) as you can.

Rayyan
Graduation year : 2014
Working company : Aricent
Designation : Hardware Design Engineer
Location: Bangalore

Q: Hello MR. Rayan, we are glad to hear from you. Would you like to share with us as to how the college catalyzed in realizing your dreams.
A: MITS college has provided many opportunities for the students to showcase their skills and interests. I believe the best of all is the campus placement facility which boosts the confidence of students and drives them towards achieving their goals.

Q: What according to you is the scope of an ECE graduate in the present industry?
A: For me, getting into the ECE department was my most fortunate decision. I feel it is the most flexible branch of study with a lot of scope, both in terms of further studies, research or jobs. In the present times, I feel that VLSI, RF systems and FPGA Design industries have ample opportunities.

Q: Any experiences from your working environment which you would like to share?
A: I would consider it an honor to personally interact with the current students about present industry if I am provided with an opportunity. There are many to share and I look forward to it.

Q: Anything you feel need to be changed in the department which would further help the students prosper?
A: No, nothing much changes are required. Everything is almost proper in the department.

Q: Any suggestions for the current students?
A: Yes, thank you. I would like to ask you to make sure what are your career choices and preferences, explore them, and start working towards them sincerely. Also, doing you academic projects in those domains would greatly benefit you in the future.

Anusha
Graduation year : 2014
Working company : Aricent
Designation : Test Automation Engineer
Location: Gurgaon, Haryana.

Q: : Hello Ms. Anusha , we are glad to hear from you. Would you like to share with us as to how the college catalyzed in realizing your dreams.
A: "Become a software engineer", a big statement was there in my mind from my childhood. I was so interested in programming. But it was only later that I realized knowing only programming is not going to help in the real time scenarios. I felt lucky about having chosen ECE. Fortunately, I got placed into Aricent and am working as a test engineer in Telecommunications domain.

Q: What according to you is the scope of an ECE graduate in the present industry?
A: A lot of core companies offer jobs in their respective area of operation like Telecommunications, VLSI, Computer Networking, Signal Processing. Students need to find out their area of interest and practically work on it before stepping out of the college. There are a lot of op-

portunities waiting in both product oriented and service oriented companies.

Q: Any experiences from your working environment which you would like to share?
A: I got placed into Aricent through campus placements. Interview was good and we had a long and elaborate technical round. After being selected, we were given training in testing. I am presently working on MSI project. It's a very friendly working environment here at Aricent, with awesome team collaboration and a lot of scope to learn. I feel it is one of the best companies to work in the Semiconductor and Telecommunications fields.

Q: Anything you feel need to be changed in the department which would further help the students prosper?
A: Everything about the department is good, though I have a few things to mention. Providing real time examples in teaching methods would be a lot helpful. Also, as a student, I always felt that maintaining records and observations take a lot of valuable time, though we cant help it.

Q: Any suggestions for the current students?
A: Students have to be willing to work hard and concentrate, and implement if they have any new ideas. Know your area of interest before your final year and try to do your project in that domain only. And always choose to enter the company which works in your area of interest.

ILLUMINATUS:

Under the ILLUMINATUS banner, two students T. Shanmukh and P. Sai Krishna of ECE III year conducted a brainstorming session called "IDEATE", a two week long event in the month of November 2015.

The concept of IDEATE was to unleash the true potential of the young minds, and channelize them towards physically realizing their plans. Basically a group activity, the participants, 17 in number, were asked to first think on a given problem, and propose a solution individually. After every approach was patiently heard, a discussion was held among the participants on the solutions, if they had any flaws, and if they could be actually implemented and so on. The next session consisted of the participants selecting the four best approaches, and then getting divided into four groups of four or five voluntarily, based on the approach they liked the most. Then came the realization part where these four groups were asked to actually work on their ideas and to practically implement them. A review session was later held in which the participants showcased their entire projects in the form of paper presentations.

COMMUNITY OUTREACH:

A man without ethics is a wild beast loosed upon this world " – Albert Camus

The students of III Year ECE B joined hands towards creating a better society by doing their part towards humanitarian activities. The monetary output of the stalls hosted by them at a cultural event Ashv'16 was used to buy uniforms, food, sports equipment and sweets for the children at a local orphanage named "Chaitanya Service Society" located in Madanapalle.

" Hands that serve are holier than lips that pray"

TRIP TO SHAR:

"The best teachers are those who show you where to look, but don't tell you what to see"

- Alexander K. Trenfor

The students of IV year ECE along with the faculty members visited the Satish Dhawan Space Centre, Sriharikota Range (SDSC, SHAR) on 25 February 2016. The visit started with a talk by P. Viswanadha Sarma, Head PO&SM, SDSC-SHAR who discussed about the various facilitiees present there. This was followed by a multimedia presentation about India's Space Programme. The students came to know about the different launch vehicles developed by ISRO and the different types of satellites which can be launched from SDSC-SHAR. They learnt about the various reasons for the Sriharikota Range being a premier space launch facility in the world. After this the group was taken to the first and second launch pads. They came to know about the different features of the two launch pads. Many questions posed by the students were answered

by the scientists at the launch pads. Later the students were taken to the museum via the main control centre building. The museum had scale models of PSLV, GSLV and GSLV-MARK III launch vehicles. Apart from this there were many illustrative and informative posters explaining the various concepts related to rockets, space crafts, satellites and astronomy.

STUDENT ARTICLES:

Pitch Vision:

PitchVision is a coaching system assisted by 2 cameras, a sensor and a proprietary software to give complete player analysis to professional and budding cricketers. It uses a set of 2 Microsoft HD cameras, one for the batsman, one for the bowler, along with a sensor and a laptop to give you technology that can capture, analyze and graphically represent player data.

"*The idea was to track the ball and where it is landing, and from that idea we created sensors that could actually capture this entire game. If you watch ESPN, all the data about the trajectory and prediction of the ball, all those are common terms or data points for us. What we have done is that we have developed this entire technology to make sure that this very same data is tomorrow available from the likes of Azad Maidan or Shivaji Park where local players will be generating this data during practice matches*" explains Rohan Timblo, CEO for miSport-creator of Pitch-Vision.

The 'Activation Sensor' included in the kit is placed on the bowling crease line before the play begins. With the help of this sensor and two cameras, the accompanying software called PitchVision Coach then generates 25 different analytic reports "accepted internationally by the likes of England Cricket Board & Cricket South Africa".

- P. Rupesh, III year

Superconducting memory cells:

Scientists from Moscow Institute of Physics and Technology (MIPT) and the Moscow State University claim to have developed a memory cell based on superconductors that could work hundreds of times faster than current memory devices. Alexander Golubov, head of MIPT's Laboratory of Quantum Topological Phenomena in Superconducting Systems, said: "With the operational function that we have proposed, there will be no need for time consuming magnetisation and demagnetisation processes.

This means read and write operations will take only a few hundred pi-

coseconds." Golubov and his colleagues have proposed creating basic memory cells based on Josephson junctions – comprised of a dielectric (or other insulating material) between two layers of superconducting material. Josephson junctions with ferromagnets as the middle layer are said to be of greatest practical interest. In their approach, the MIPT/MSU team proposes encoding the data in Josephson cells in the value of the superconducting current. In their work, the scientists discovered the system may have two energy minima and say these can be used to record data.

In order to switch memories from 'zero' to 'one' and back again, the team suggests using injection currents Lowing through one of the superconducting layers and say these operations can be performed 'hundreds of times faster' than measuring the magnetisation or magnetisation reversal of a ferromagnet. Golubov added: "Our method requires only one ferromagnetic layer, which means it can be adapted to single Lux quantum logic circuits. A computer based on single Lux quantum logic can have a clock speed of hundreds of gigahertz and its power consumption will be dozens of times lower."

<div align="right">- K. Avinash, III Year</div>

Smart Headlights:

Car headlights, it seems, have developed a mind of their own. Not long ago, it was a matter of full or dipped beams and fog lights if you really wanted to push the boat out. Not any more. Today's state of the art lighting can point out potential hazards in the road ahead; tomorrow's offerings might even be able to have a limited conversation with you. Stephan Berlitz, head of lighting functions and innovation with Audi, said: "Car lighting was essentially the same for 100 years, with the driver switching manually between high and low beams." But he noted that times are changing. "The ;rst step in developing intelligent lighting was to use a forward looking camera to recognise things and switch between high and low beam automatically.

Now, with matrix lights, it's possible to turn off particular areas; for example, an oncoming car. It's a win-win," he continued, "you can always drive on high beam and see as much of the road ahead as possible." The move to embedding more Intelligence in headlights has been underway for about 15 years. "We have always wanted to create perfect lighting,"

Berlitz said. "Now, all the things we need to create such a system are available, so we can now think about what's possible and what we need to do to bring such a system to a car." Audi's most sophisticated head-lamp arrangement is the Matrix LED unit, which provides maximum illumination of the road by maintaining a constant high beam without dazzling other road users. The electronic unit has no mechanical parts; instead, LEDs can be lit or dimmed individually, diverting their beam around traf;c. But there are other applications beyond avoid dazzling other drivers, including highlighting potential danger ahead and avoiding too much reflected glare from roadsigns. "It can help drivers in road works, for example, where there are narrow lanes," Berlitz said. "The headlights could project a beam which is the width of the car to show whether or not there's enough room. It helps drivers to feel safer."

The next step will be Matrix laser headlights, which will take advantage of digital micromirror technology. While today's intelligent lights have 25 segments, tomorrow's versions may have 400,000 segments in each light, with each mirror able to move at rates of up to 5kHz, enabling entirely new features. One such idea is car-to-pedestrian communications. "If a car is approaching," Berlitz said, "the pedestrian might wonder if it's safe to cross the road. Intelligent lighting systems can project a message in front of them to say whether to cross or wait. Intelligent lighting relies on input from a front facing camera. "Normal cameras are fast enough," Berlitz said, "but the big problem is differentiating between oncoming cars and those in front. You need a ;eld of view of more than ±20° because you need to see road signs and so on. And it needs to be able to recognise lights at night. Stereo cameras would be better, but we have found other ways to do this."

Headlighting systems currently use relatively simple controls, but those with micro mirrors will need to be operated using complex video signals. "That's going to need a completely new architecture," Berlitz pointed out, "in which you can create, calculate and send video to the headlights." Also on the road map are headlights that tie into the vehicle's navigation system, so the light 'turns into' bends as the car approaches and which highlight features such as crossroads.

- M. Madhu Mohan, III Year

Open Standard - IOT Platform:

According to its creators – Advantech, ARM, Bosch, Texas Instruments and Sensirion – M2.COM is an evolutionary module technology designed specifically for IoT sensors and devices. With networking, computing and data collection features on one module, M2.COM is intended to help transform obsolete applications into IoT generation solutions. The partners say the modular design makes the concept Aexible enough to support different applications and to meet the changing demands of the IoT world. Miller Chang, VP of Advantech's Embedded Computing Group, said: "Data collection will be one of the main challenges for IoT. Sensors, wireless technology and embedded computing will be the three major core abilities for data acquisition and that's the reason Advantech worked closely with industrial partners to define the M2.COM open standard. With this standardisation, we envision M2.COM will accelerate IoT sensor device deployment."

M2.COM is said to support all the necessary software stacks needed to build IoT sensor devices. Devices built using the M2.COM standard will be able to take advantage of ARM's mbed operating system, as well as multiple IoT communication protocols, including LWM2M, OSGI, All-Joyn and MQTT. Using the modular format, say the collaborators, data can be acquired quickly and transformed into a format suitable for use by cloud service providers. Zach Shelby, vice president of marketing with ARM's IoT business, noted: "The ARM mbed OS provides the perfect foundation for this new format, supporting the needed communication protocols and formats to securely and easily integrate M2.COM based sensor devices with IoT cloud applications." The M2.COM platform (see fig 1) is based on the type 2230 M.2 form factor. With a 75 position host interface connector, the module measures 30mm long and 22mm wide, said to be helpful for implementing microsensors and for system integration.

- T. Sairam, III Year

Differences between JAVA platform from desktops to wearables:

Developers of smaller embedded or IoT devices have been using legacy technologies and tools largely based on C language programming and real-time operating systems (RTOSs). But embedded C and RTOS experts are hard to find (maybe a few 10,000 or so worldwide) and tend to focus on low-level, hardware-dependent software development—drivers and board support packages (BSPs) for operating system (OS) bring-up. For higher-level, hardware-independent software programming, developers naturally turn to the Java language to benefit from the same advantages enjoyed by developers for PCs and mobiles. They can also tap into a worldwide pool of 10 million trained and skilled engineers. The Java software execution environment enables developers to write code that can be ported across the fragmented hardware and diverse low-level software characterizing the embedded/IoT landscape. On PCs and servers, developers mainly address two operating systems—Microsoft Windows and the open-source Linux—on the dominant Intel architecture.

On smartphones and tablets, developers target either Google Android, which mostly runs on ARM architectures, or Apple iOS for a single hardware. Embedded platforms rely on a variety of commercial, open-source or in-house RTOS, libraries (e.g., TCP/IP; file systems; SSL/TLS; serial I/O; communication stacks for USB, CAN, Bluetooth, LTE and other wireless networks), and compiler/linker toolchains. All combinations of the above software elements have to run on a large variety of 32-bit instruction set architectures (ISAs), including ARM Cortex-M and Cortex-A, MIPS32, POWER, TriCore, PIC32, AVR32, RX, etc.

IoT obviously means connectivity to the Internet, but it also means integration to standardized IT client-server architectures, protocols, and frameworks. This integration allows for interaction with business/enterprise services and monetization of data generated by devices and applications. IoT devices interact with cloud platforms through standard protocols. It enables delivering new services through applications downloaded from online stores, which creates new business opportunities after devices are sold and deployed in the field. IoT devices also send data streams to cloud-based data-analytics servers in order to ex-

ploit information on their use. Lastly, IoT devices interact with the physical world through sensors and actuators by leveraging standards (e.g., Android hardware API).

To support embedded/IoT cost-effectiveness resulting in strong technical constraints, Java platforms for embedded/IoT/wearable devices need to follow a set of requirements that make them unique compared to Java implementations on servers, desktops, and mobile and high-end embedded systems. The Java language, as the number one programming language, is naturally used by IoT software developers to create hardware-independent applications. It offers all of the necessary facilities for creating IoT end-to-end business applications and associated ecosystems, from sensors to cloud, based on standard protocols and frameworks.

- P. Sai Krishna, III Year

STUDENT PARTICIPATIONS:

"*Don't let the fear of failiure triumph over the joy of participating*"

♦ M. D. Vijay Kumar, P. Sumiya, S. Soundarya, G. Thejaswini attended a workshop on IoT conducted at IISc Bangalore at Pravega 2016.

♦ P. Sreenivasulu and K. Srikanth presented a paper on "VLSI and Nano-Technology" at Ample 2016, SVCE Tirupati.

♦ P. Sai Krishna presented a paper on "RF Energy Harvesting" at E-War 2k16 at MTIT and won the I prize.

♦ P. Dinesh and K. Anusha presented a paper on "MEMS and Nano-technology" at Evince 2k16 at RGEC, Kurnool.

♦ K. Avinash presented a paper on "Somnolent Driver Detection and Alar.m" at E-War 2k16 at MTIT

♦ T. Sairam and B. Sai Teja presented a paper at NAKSHATRA'15 at SAEC, Chennai.

♦ P. Sai Krishna and P. Dileep Naidu presented a paper at NAKSHATRA'15 at SAEC, Chennai.

♦ A workshop on "Robotic Core System Desgn" was conducted by PER college, Pondicherry on 21 August, which was attended by
   * Lakshmi Supraja. V
   * Ashwini G
   * Chaitanya P
   * Manasa C
   * Muneer Basha G
   * Manal Khaja S
   * Firoz Basha
   * Sreekath Y
   * Asmiya Banu S
   * Gireesh N
   * Tejaswini
   * Rajasekhar M

- ♦ A workshop on "Embedded systems in Real-Time Applications using Arduino and Raspeberry PI" was conducted by VIT college, Chennai on 10 October, which was attended by
    * P. Chaitanya
    * K. Archana
    * Dinesh Prasad
    * Firoz Basha
    * Dharma Teja
    * Bhargavi
    * Mohammad Irfan
    * S. Hussain
    * V. Geethika
    * B. Geethanjali
    * R. Bhargavi
    * Y. Harika
    * P. Dinesh Kumar
    * L. Sunil Kumar
    * K. Anusha
    * K. Bhargavi
    * Y. Mamatha
    * S. Nireesha Gayathri
    * G. Kalyani

- ♦ A workshop on "Design and Fabrication of PCB" was conducted by MITS college, Madanapalle on 4 -7 November 2015, which was attended by
    * U. Bhargav
    * N. Gireesh
    * S. Manoj Kumar
    * S.. Sasidhar
    * P. Dinesh
    * P. Srinivasulu
    * S. Firoz Basha
    * P. Dharma Teja
    * P. Sravani
    * Y. Sreekanth
    * K. Venkatesh
    * M. D. Vijay Kumar
    * S. Masthan

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K Naga Supriya

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S Shabana Begum

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Javani M   M Sathya   K Sravani

K Udaya Rashmi

M Venkata Narayana

M Vijaya

R Ashwin

V Jayanth

G Sirisha Reddy

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N Bhanu Chandhar

K Devi Priya

B Divya

K Harshiya Banu

T Hemalatha

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C Sai Prathap Reddy

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