G. NARAYANAMMA INSTITUTE OF TECHNOLOGY & SCIENCE (For Women)
(AUTONOMOUS)
Shaikpet, Hyderabad – 500104

Department: Electronics and Telematics Engineering

2019-20

REPORT

STTP on "Embedded Systems in Internet of Things (IoT)"

Date of Program: 25-11-2019 to 30-11-2019

Resource Person:

1. Dr. P.S. Sai Krishna, Assistant Professor, EE Department, IIT Tirupati
2. Dr. Sachin Chaudhari, Assistant Professor, SPCRC, IIIT Hyderabad
3. Dr. P.V.S Maruthi Rao, Founder Director, Videentum R&D Pvt. Ltd, Hyderabad
4. N. Venkatesh, Sr. Vice President, Redpine Signals
5. Amarender Katakam, Director, CEO, Smart Bridge Edu Services Pvt. Ltd., Hyderabad
6. Pradeepthi D, Sr. IoT Developer, Smart Bridge Edu Services Pvt. Ltd., Hyderabad
7. G. Sudheer, Technical Manager, Votary Softech Solutions Pvt. Ltd., Hyderabad
8. P. Veerababu, IoT Penetration Tester, Bengaluru

About the Program: I, A. Chandra Shaker, attended AICTE STTP on "Embedded Systems in Internet of Things (IoT)" organized by G. Narayanamma Institute of Technology and Science, ECE Department in association with AICTE. This FDP provided insights in the latest research works in the field of Embedded Systems and IoT. FDP also provided hands-on various smart device applications using IoT platforms. FDP also covered security aspects of Embedded Systems and IoT devices

Signature of the Faculty Member

A. Chandra Shaker, Asst. Professor, ETE

AICTE Sponsored Short Term Training Programme
on
"EMBEDDED SYSTEMS in IoT"
List of Resource Persons

S.No	Name of the Resource Person	Designation and Address	Contact Details
1.	Dr. P. S. Sai Krishna	Assistant Professor, Electrical Engineering Dept., IIT- Tirupathi, A.P.	psskrishna@iittp.ac.in Phone: 08772503261
2.	Dr. Sachin Chaudhari	Assistant Professor, SPCRC, IIIT-Hyderabad, Telangana	Sachin.chaudhari@iiit.ac.in Phone: 040 66531363
3.	Sri P.V.S Maruthi Rao	Founder Director, Videcentum R&D Pvt.Ltd., Hyderabad, Telangana	maruthi@vidcentum.com Phone: 9052512020
4.	Mr. Amarender Katakam	Director, CEO, Smart Bridge Educational Services Pvt.Ltd., Hyderabad, Telangana	amar@thesmartbridge.com Phone: 08772503261
5.	Mr. G. Sudheer	Technical manager, Votary Tech, Hyderabad, Telangana	gsudheerg@gmail.com Phone: 08772503261
6.	Sri N. Venkatesh	Sr. Vice President, Redpine Signals, Hyderabad, Telangana	nvenkatesh@ieee.org Phone: 9849456036
7.	Mr. P. Veerababu	Quality Security Engineer, Creston S/W, Bangalore, Karnataka	Veeru.rockstar249@gmail.com Phone: 8073646264
8.	M/S D. Pradeepthi	Sr. IoT Engineer, SmartBridge Educational Services Pvt,Ltd., Hyderabad,Telangana	pradeepthi@thesmartbridge.com Phone: 9000328122
9.	Dr.K.Ragini	Professor, Dept. of ECE, GNITS, Hyderabad, Telangana	Ragini_kanchimi@yahoo.co.in Phone: 9849627161
10.	Mr.P. Chandra Sekhar	Assistant Professor, Dept. of ECE, GNITS, Hyderabad, Telangana	chandrasekharpaseddula@gmail.com Phone:8106909759

Dr.K.Ragini
Coordinator, STTP
Professor, Dept.of ECE
GNITS

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Street, Hyderabad - 500 104.

2) **Dr. Sachin Chaudhari, Asst.Professor, Signal Processing and Communications Research Center (SPCRC), IIIT – H**

Qualifications:

- B.E.(Electronics) from Visvesvaraya National Institute of Technology, Nagpur, India in 2002
- M.E. (Telecommunication) from Indian Institute of Science, Bangalore, India in 2004.
- During 2007-2012, he has done PhD at Department of Signal Processing and Acoustics, Aalto University (formerly Helsinki University of Technology (TKK)).
  Department of Signal Processing and Acoustics at Aalto is part of SMARAD (Smart and Novel Radios Research Unit) Center of Excellence in Research nominated by Academy of Finland.
  During 2008-2010, my research was part of EU FP7 project called Sensor Networks for Dynamic and cognitive Radio Access (*SENDORA*).
- Between 2013-2014, he has done post-doctoral research at Aalto University where he worked on the Phase 2 of a Tekes (Finnish funding agency) funded project called Enabling Methods for Dynamic Spectrum Access and Cognitive Radios (*ENCOR 2*).

Work Experience:

- During 2004-2007, he worked at Esqube Communications, Bangalore which was a start-up by IISc Professors, as a Senior Wireless Communications Engineer.
  At Esqube, he worked on development and implementation of wireless systems such as WLAN, WiMAX, and TDD-SCDMA.
- Since December 2014, he was working as an Assistant Professor at IIIT-Hyderabad.

Research interests: Signal Processing for Wireless Communication
In particular, physical layer aspects of
- Next-generation wireless communication systems (5G)
- Internet of Things (IoT)
- Cognitive Radios

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Research Grants:

- PI, "IoT Enabled Smart Cities: Pollution, Health and Governance", IIIT-Hyderabad for 08/2019 - 07/2020, PRIF funding for social impact research
- Coordinator, Center of Excellence on IoT, IIIT-Hyderabad for 11/2018 - 10/2019 (India-EU collaboration on ICT standardization)
- PI, Early Career Research Award, SERB, DST, India on 5G research for 6/2016-5/2019 (3 years)
- Participant, Aalto-IITI Cooperation for the skill developments of IoT based implementation for 9/2016-8/2018 (CIMO mobility grant for 2 years)

Master's Thesis Guided:

- Anish Shastri, *Data Reduction For IoT Networks: Algorithms and Implementation*, June 2019. (MS by Research student at IIIT-H)
- UpenderKeesara, *Spectrum Sensing of FBMC Signals in 5G and Cognitive Radios*, July 2018. (MS by Research student at IIIT-H)
- Prakash Gohain, *Dempster-Shafer Theory Based Cooperative Energy Detection Under Noise Uncertainties In Cognitive Radio Networks*, December 2017. (MS by Research student at IIIT-H)
- Aditi Jhingran, *Physical layer signal processing for 5G - FBMC*, May 2016. (MTech student of VIT-Vellore did her Thesis at IIIT-H)
- C. Ramanathan, *Spatial Interpolation of Field Measurements for Cognitive Radio Networks*, April 2016. (M.Tech student of Sastra University-Thanjavur did his Thesis at IIIT-H)
- Irene Rognoni, *Geostatistics in Cognitive Radios*, Aalto University, Finland, October 2014. (Co-instructed the MS student with Jan Oksanen, Guide: Prof. Visa Koivunen)
- JoonaJantti, *Spectrum Sensing and Waveform Classification Using Cepstral Analysis*, Aalto University, Finland, June 2014. (instructed the MS student, Guide: Prof. Visa Koivunen)

3) **P.V.S.Maruthi Rao,** Founder & CEO of Vidcentum

Education details:

M.Tech in Computer Applications in Industrial Drives –University of Mysore during 1995-1997

Work Experience:

20+ years of diversified experience in development of infrastructure software and systems for Telecom, IoT and Web Applications, leading engineering teams, managing startups, technology and business management.

Companies work for:

- He is a Founder Director of Farout Technologies Pvt Ltd - an End-to-End Data Management and Analytics Company.
- He is also a Founder Director of Vidcentum R&D - an Industrial Smart Asset Management Solutions Company.
- Prior to founding VidcentumR&D and Farout Technologies, he worked in Airvana Networks, Telsima Communications, Satyam Computer Services.

Academic Engagement:

- He taught Data Mining to Masters students of BITS Pilani Work Integrated Learning Programmes in Hyderabad.
- He mentored a group of Engineering students on software engineering and protocol stack development.

Professional Engagement and Volunteering:

- He is a Senior Member of IEEE and an active volunteer of IEEE. He served as Secretary, Treasurer, Chairman Computer Society Chapter, Vice Chair and Chairman of IEEE Hyderabad Section.
- He involved in development of IEEE 1451-99 Standard for Harmonization of Internet of Things (IoT) Devices and Systems.

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4) AmarenderKatkam, Founder & CEO of SmartBridge Edu. Services Pvt. Ltd.

Working Experience:

He has more than 12 years of industrial experience in industrial instrumentation & control systems with expertise in Industrial Internet of Things (IIoT), Industrial Networks, Data driven intelligent systems, Industrial Robotics. He is a solution architect and working as consultant with companies in the domains of IoT, IIoT, Artificial Intelligence, Industry 4.0.

Some of successful solutions developed & deployed:

• Asset Management & Tracking System

• Smart Water Purification & Vending Systems

• Battery Management System for Electric Vehicles

• Precision Agriculture & Farmer Recommendation System

• Predictive Maintenance System for Solar Power Plants He had received IBM Champion 2018, 2019 from IBM Global team in recognition of his contribution to enable the student community with emerging technology skills.

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5) SudheerGurram, Technical Project Manager at Votary Softech Solutions Pvt. Ltd.

Qualifications:

- M.Tech in Microwave and Communication Engineering, at Osmania University.
- B.Tech (ECE) at VNR VignanaJyothi Institute of Engineering & Technology

Work Experience:

- Since 2017, He has been working as Technical Project manager at Votary Softech Solutions Pvt.Ltd
- Technical Lead at Msys Technologies for 1year 2 months
- Graphics Software Engineer at Intel Corporation for 4 years 3 months
- Software Engineer at Insyde Mobile Technologies for 4 years
- Associate Software Engineer at BlueAlly (Previously VisualSoft) for 2 years

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6) N.Venkatesh, Vice President, Redpine Signals

Qualifications:

- M.Tech in Electrical Engineering from the Indian Institute of Technology, Madras, India.

Work Experience:

- He has over 28 years of engineering and management experience in wireless system design, telecommunications, optical networking and avionics.
- He is a wireless specialist with responsibilities include leading the development of wireless systems at Redpine's development center in Hyderabad, and their application in diverse industry areas. His current focus is on wireless connectivity in the Internet of Things.
- Prior to joining Redpine Signals, he was General Manager at Paxonet Communications.
- Prior to that, he was Deputy Manager in the avionics research unit of Hindustan Aeronautics Ltd.
- He holds 21 US patents, and has contributed to IEEE standards development and has written numerous articles in technical journals.
- He is a Fellow of the Indian National Academy of Engineering and a recipient of the VASVIK Award for Industrial Research in 2011.

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7) **P. Veerababu,** IoT Penetration Tester, Bengaluru, Karnataka, India

He is currently working on

- IoT exploitation and SDR and various frequencies
- IoT gadgets (Raspberry pi, arduino, sdr, jtags, serial adapters, etc).
- Firmware analysis And Reverse Engineering
- Hardware hacking and reverse engineering
- Experience on conducting VAPT on Network and Web Applications , Mobile
- Python Scripting
- CTF Walk through and Playing
- Delivering the Knowledge Sharing sessions in Open Security Communities
- OTA security checking and IoT Protocol pen-testing

Work Experience:

Quality engineer – Security since Feb 2019

Consultant at Aujas for 9 months

Security Consultant at ISEURION for 1 year 1 month

Independent Security consultant

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8) **M/s D. Pradeepthi, Sr. IoT Engineer**

Profile:
Working as Sr. IoT Engineer with Smart Bridge Educational Services Pvt. Ltd for last four years. Developed few Real time IoT applications which are collaborated with different IoT services in Cloud platforms like IBM Watson, Amazon web Services, and Firebase and those applications lies in consumer and industrial sectors. Trained more than 4500+ students on Internet of Things during their Internships, Hackathons and Workshop programs with us.

Academic Qualifications:
Bachelor of Technology in Electronics and Communication Engineering from Annamacharya Institute of Engineering & Technology, Hyderabad, 2015

Professional experience:
Project Title: Smart City Architecture based on IOT Technology environment monitoring for long range communication.
Project Title: Remote Gas Pipeline Tunnel Temperature Monitoring System using Zigbee and IBM Watson. Description: The leading engineering and system integration providers needed exactly the right solution for a challenging gas pipeline application. In the confined space of a tunnel, temperature rises easily, and the overheating could cause pipeline fractures that could lead to gas leaks or even explosions.

- Developed a hardware system using ZigBee Technology to monitor the temperature levels in the pipe line.
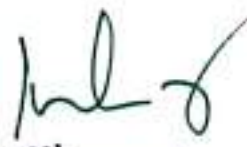- Developed a web application is also build to visualize the data at all the nodes.

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9) **Dr. K. Ragini**, Professor, Dept. of ECE, GNITS
   Coordinator, AICTE sponsored STTP on 'Embedded systems in IoT'

Qualification: Ph. D

Work Experience:

- Dr.K.Ragini, working as Professor in ECE Department of G.Narayanamma Institute of Technology& Science(For Women).
- She has 23 Years of Teaching Experience. Completed her Ph.D from JNTUH in 2013.
- As an FDP Coordinator,she had organized more than 10 workshops.
- She Received "Women Achiever" Award from Accenture on women's day 2017, 'Academic Excellence Award' in GNITS in 2007.
- Authored 2 Books: 1.Variable Threshold MOSFETS, Research India Publications 2.Variable Threshold MOSFET Applications Research India Publications.
- She has actively participated in various Research activities.
- She has published papers in 35 reputed journals.

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10) Mr. P. Chandra Sekhar, Asst. Professor, Dept. of ECE, GNITS

He completed his Bachelor of engineering degree in Electronics and Communication Engineering from R.G.M.C.E.T Engineering College, Nandyala, AndhraPradesh and received B.Techdegree in the year 2005 from JNTU University, Hyderabad, Telangana. He received Master ofEngineering degree in the year 2009 from JNTU University Anantapur, AndhraPradesh. Pursuing his Ph.Dat International Institute of Information Technology, Hyderabad. Currently, he is working as an AssistantProfessor in the department of Electronics and Communication Engineering, G. Narayanamma Institute ofTechnology and science for women's, Shaikpet, Hyderabad, Telangana. He has authored over 6 researchpapers in refereed journals and conferences proceedings. He attended various international conferences andpresented technical papers. He is achieved "VISVESVARAYA PhD SCHEME FOR ELECTRONICS AND IT"scholarship in 2016. He is recognized as the professional member of ISCA. His research interests areAudio/Speech processing, Embedded Systems & IoT and working on projects of reputed organizations.

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BRIEF BIO-DATA OF SPEAKERS & COORDINATORS

1) Dr.P.S.Sai Krishna, Assistant Professor, Electrical Engineering Dept., IIT-T

Qualifications:

- Ph.D. in Systems and Control from the Department of Electrical Engineering, IIT Madras.
- M.Tech in Measurement and Instrumentation from IIT Roorkee.

Work Experience:

- He is currently working at IIT Tirupati as an Assistant Professor in the Department of Electrical Engineering.
- He has over 6 years of experience in Industry with significant time in ABB Ltd (Bangalore) as a Design Engineer (Control Systems).
- He also has around 5 years of teaching experience which includes experience at BITS Pilani (Hyd. Campus) and IIT Tirupati.

Areas of Research Interest:

- Distributed Control Of Large-Scale Systems,
- Autonomic Cloud computing and
- Development of low-cost training simulators for process plants.

Publications:

- P. S. Saikrishna; R.Pasumarthy; N.P.Bhatt, Identification and Multivariable Gain-Scheduling Control for Cloud Computing Systems, IEEE Transactions on Control Systems Technology, 10.1109/TCST.2016.2580659, 2017
- P. S. Saikrishna; R. Pasumarthy "Multi-objective switching controller for Cloud computing systems" in IFAC Journal of Control Engineering Practice vol.57, pp.72-83, 2016
- P.S. Saikrishna, D Singh, RamkrishnaPasumarthy, "Perspectives of Data-driven LPV modeling of Cloud Computing systems" in Proc. The 55th IEEE Conference on Decision and Control (CDC), pp. 1669-1674, Las Vegas, USA, December 2016.
- P.S. Saikrishna, AddarshChandrasekar, and RamkrishnaPasumarthy. "Performance guarantees via pole placement for a Web-server hosted on a private cloud", in Proc. Control Conference (ECC), 2015 European, pp. 854-859. IEEE, July 2015.
- P.S. Saikrishna, Nirav P Bhatt and R. Pasumarthy, "An LPV Approach to Performance Modelling of a Web-Server on a Private Cloud", in Proc. American Control. Conf., Chicago, USA, pp.1519 -1524, IEEE, June 2015.

IoT

About the Institute

G. Narayanamma Institute of Technology & Science, a leading engineering college in Hyderabad for women founded by Late Sri G. Pulla Reddy garu in 1997, with the objective of providing an excellent learning facility for women to pursue education in engineering. The Institute aims to promote Technical Education among Women to enhance and build-up a new generation of thinkers, innovators and planners in the technical realms of Science & Technology. GNITS received UGC autonomous status for 10 years from 2018 and is affiliated to Jawaharlal Nehru Technological University (JNTU-H), Hyderabad. It is approved by All India Council for Technical Education (AICTE), accredited by NAAC & NBA (AICTE) and ISO 9001:2015 Certified Institution.

About Dept. of ECE

ECE Department was started in 1997 with an intake of 60 and in a short period, the intake was increased to 180. The Department introduced M.Tech with Specialization of Digital Electronics & Communication Engineering in 2007 with an intake of 18 students. There are 6 Doctorates in the Department. For the academic year 2018-19, the department received 25 lakhs of funding through AICTE. An amount of more than 2 crores is spent so far for establishment of labs. The infrastructural facilities have been upgraded in the department with the extension of existing and new laboratories in the fields of VLSI, Communications, Microwave and Signal processing domains.

About AICTE-STTP

Short Term Training Programme (STTP) intends to conduct faculty trainings through financial assistance from AICTE to enable faculty members in the field of technical education to introspect and learn techniques that can help prepare students for active and successful participants in a knowledge society.

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The objectives of this Short-Term Training Programme are:

❖ To provide an extended knowledge on IoT applications.

❖ To explore latest research works going on in the field of embedded systems and IoT technology.

❖ Hands on various Smart device applications through IoT platform.

Contents

➤ Building Smart Device with ARM.

➤ ARM based IoTs by CDAC: UbiMote in Linux Environment.

➤ Introduction to Industrial Internet of Things

➤ IoT Gateway Architectures

➤ Smart Sensors for IoT

➤ Communication Technologies for IoT

➤ IoT platform Architectures

➤ Wireless Sensor Network for IoT Applications

➤ Best Practices for IoT Security

Resource Persons

Dr., P.S. Sai krishna, IIT Tirupati

Dr. Sachin Chaudhari, IIITH

Sri. N. Venkatesh, Sr. Vice President, Redpine Signals

Sri. P.V.S.Maruthi Rao, Founder Director, Vidcentum R&D Pvt. Ltd.

Mr. Amarendra Katakam, Director & CEO, SmartBridge

Mr. G.Sudheer, Technical Manager, Votary Tech.

Mr. Veerababu P, Quality Security Engineer, Crestan S/w

Practical Hands on from leading industry personnel.

FUTURE

Chief Patrons:

Sri. P. Subba Reddy, Chairman

Smt. G. Srividya Reddy, Vice Chairman

Chairman:

Dr. K. Ramesh Reddy, Principal

Organizing Committee:

Convener:

Dr. B. Venkateshulu, Professor, HOD-ECE

Coordinator:

Dr. K. Ragini, Professor, ECE

Co-coordinators:

Mrs. A. Deepthi, Asst.Professor, ECE

Mrs. T. Srilatha, Asst.Professor, ECE

Mrs. G. Madhavi, Asst.Professor, ECE

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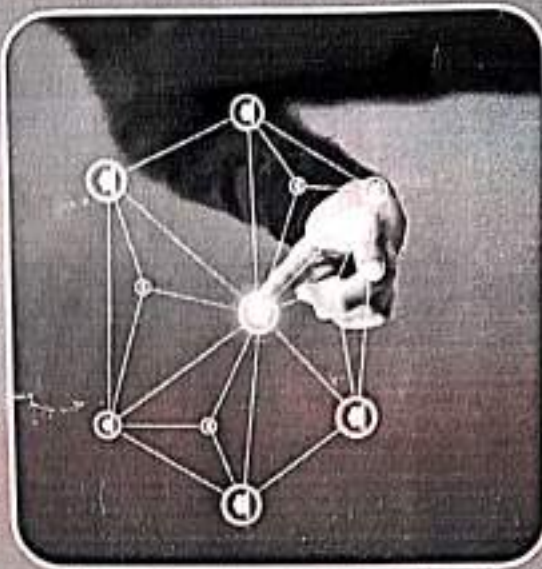(AUTONOMOUS)
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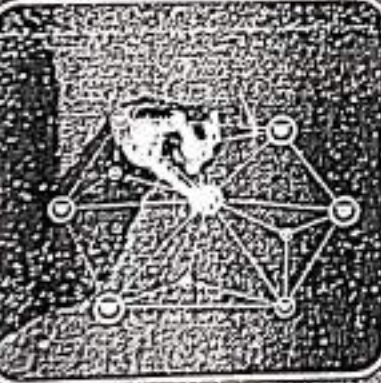(25th to 30th November 2019)

Organized by

DEPT OF ELECTRONICS AND COMMUNICATIONS ENGINEERING

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NBA & NAAC
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Important dates:

Last Date of Registration:	15th Nov'19
Announcement of selected candidates:	18th Nov'19
Schedule of the event:	25th - 30th Nov'19

Eligibility:
- Academicians in any discipline from the engineering institutions
- Industry Personal
- Research Scholars.

Registration Fee: Free

Selection will be based on First Come First Serve basis subject to a maximum of 40 participants.

Accommodation: Twin/Three sharing accommodation will be provided for outstation participants on first come first serve basis.

Travelling Allowance: Travelling allowance (Sleeper class train or bus fare by shortest route) will be reimbursed to outstation participants as per norms on submission of original tickets.

Online Registration Link:
https://forms.gle/jh6rvJ82cK6zEY288

All the participants have to send scanned copies of sponsorship letter, declaration and a Demand Draft of Rs.1000/- drawn in favor of 'Principal, GNITS', Payable at Hyderabad to e-mail id given below. However, DD shall be returned to the first 40 participants.

Address for all Correspondence
Dr. K. Ragini (Coordinator)
Professor, ECE, GNITS, Shaikpet, Hyderabad-104.
Mobile: 9849627161 / 9966437906
E-mail: ragini.gnits.ece@gmail.com

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REGISTRATION FORM

1. Name: _____
2. Date of Birth & Age: _____
3. Gender (M/F): _____
4. Qualification: _____
5. Teaching/Industry Experience: _____
6. a) Designation: _____
   b) Department: _____
7. a) Institution: _____
   b) Address of Institution: _____
   c) Affiliating University: _____
8. Address for Correspondence: _____
9. Mobile No. _____
10. E-mail Id: _____

A One Week AICTE Sponsored STTP on "Embedded Systems in IOT" (25-11-19 to 30-11-19)

S.No/Date	9.00 AM to 10.30 AM Session – I	10.30 AM to 10.45 AM	10.45 AM to 12.15 PM Session – II	12.15 PM to 1.00 PM	1.00 PM to 2.30 PM Session – III	2.30 PM to 2.45 PM	2.45 PM to 4.15 PM Session – IV
25-11-2019 (DAY-1)	Registration & Inaugural — Introduction to Internet of Things(IOT) — Dr.P.S.Sai Krishna,IIT-T	T E A	Deep drive into IoT Technology Stack — Dr.P.S.Sai Krishna,IIT-T	L U N C H	Physical Electronic Devices - Smart Devices — Dr.P.S.Sai Krishna,IIT-T	T E A	Introduction and Demo on ARM based IoTs by CDAC: UbiMote in Linux Environment — Dr.P.S.Sai Krishna,IIT-T
26-11-2019 (DAY-2)	Communication Technologies for IoT Short Range & Long rage Communication technologies System on Chips & Wireless Radios — Dr.Sachin Chowdary,IIITH	B R E A K	Introduction to Industrial Internet of Things (IIOT) — Dr.P.S.Sai Krishna,IIT-T	B R E A K	Introduction to ARM based IoTs by CDAC: WiFi and BLE Motes — Dr.P.S.Sai Krishna,IIT-T	B R E A K	Demo on ARM based IoTs by CDAC — Dr P.S.Sai Krishna,IIT-T
27-11-2019 (DAY-3)	Introduction to Edge/Fog Computing — Dr.P.S.Sai Krishna,IIT-T		IOT Gateways Edge Computing — Sri P.V.S.MaruthiRao,Founder Director,Videentum R&D Pvt,Ltd		Communication Protocols for Data Exchange in IoT — Abhishek GD,Cloud Developer, Smart Bridge		Hands-on practicals — Abhishek GD,Cloud Developer, Smart Bridge
28-11-2019 (DAY-4)	Introduction to IoT Platforms — Mr.Amarender K Director,CEO,Smart Bridge		API & Device Management — Mr.Amarender K Katakan,Director,CEO,Smart Bridge		Implementing IoT Platform SDK's in Embedded Devices — Pradeepti D, Sr.IOT Developer, Smart Bridge		Analytics at IoT Platform — Pradeepti D, Sr.IOT Developer, Smart Bridge
29-11-2019 (DAY-5)	Protocol Stack of IEEE802.15.4& IEEE802.15.11 for PANS — Mr.G. Sudheer ,Technical Manager, Votary Tech		Wireless Sensor Networks for IoT Applications — Sri N.Venkatesh,Sr.Vice President,Redpine signals		Embedded System for WSN nodes — Surya Teja M, Sr.IOT Developer, Smart Bridge		Energy Harvesting Principle for WSN Self Healing Properties — Surya Teja M, Sr.IOT Developer, Smart Bridge
30-11-2019 (DAY-6)	Introduction to IoT Security — Mr.Veerababu P,Quality Security Engineer,Creston S/W		Embedded IoT Security — Mr.Veerababu P,Quality Security Engineer,Creston S/W		Examination based on EMBEDDED SYSTEMS IN IOT		Valedictory Session

Dr.K.Ragini
Professor, ECE
STTP Coordinator

Dr.B.Venkateshulu
Professor& HOD-ECE
STTP Convener

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