

EDUCATION

National Institute of Technology Tiruchirappalli	Tiruchirappalli, India
▪ Master of Science (M.S.) by Research	2016 – 19
▪ <i>Relevant coursework:</i> Smart Grids, Power Systems	CGPA: 9/10
▪ <i>Advisor:</i> Dr. M. P. Selvan	
BBD Northern India Institute of Technology, Uttar Pradesh Technical University	Lucknow, India
▪ Bachelor of Technology (B.Tech.) with <i>First Class Honours</i>	2010 – 14
▪ Electrical & Electronics Engineering	Percentage: 78.6/100
Board of High School and Intermediate Education, Uttar Pradesh	Chopan, India
▪ Intermediate of Science with <i>First Class</i>	Percentage: 74.2/100
▪ High School with <i>First Class</i>	Percentage: 65.3/100

EXPERIENCE

Tata Communications Ltd.	Mumbai, India
<i>Product Management Specialist (Assistant Manager)</i>	2019 – Present
▪ Associated with technical project delivery team & learning to act as engineering Scrum-Master	
National Institute of Technology Tiruchirappalli	Tiruchirappalli, India
<i>Graduate Researcher</i>	2016 – 2019
▪ Thesis: Realization of multi-agent system for residential demand response under smart grid paradigm	
▪ <i>Funding Agency:</i> Ministry of Electronics and Information Technology (MeitY), Government of India	
○ A residential building under smart grid paradigm constitutes the scope. Multiple agents have been developed in the laboratory which considers key grid parameters and key consumer parameters for the optimal operation of residential loads (including thermostatically controlled loads and electric vehicle) to implement the demand response. The developed agents are namely load management unit, smart load nodes for non-smart loads, smart load nodes for thermostatically controlled loads, smart energy meter, and battery SoC estimator cum charge controller.	
<i>Teaching Assistance / Activities</i>	2017 – 2019
▪ Member of Executive Committee & Webmaster, IEEE Student Branch	
▪ Mentored undergraduate students in various projects	
▪ Assisted microprocessor and microcontroller, linear IC laboratory, and DC machines for undergraduate students	

PATENTS

- **Title:** Smart Load Node System for Operating an Appliance and Method Thereof., **Inventors:** S. Singh, A. Roy and Selvan M.P., **Status:** **Filed & Published in** IP India Journal, March 01, 2019, App No. 201741039083 dated November 2, 2017.
 - A novel solution for intelligent operation of non-smart household appliances under smart grid environment using the proposed smart load node. Its implementation neither requires any infrastructural change in the electrical wiring of a house nor any constructional change in home appliances at the manufacturing stage and at the consumer end.

REFEREED PUBLICATIONS

- S. Singh, A. Namboodiri and M. P. Selvan, "Realization of Agent Based System to Control the Air-Conditioner and EV Charging for Residential Peak Shaving in Smart Cities," *IET Smart Cities*, (**Provisional Acceptance, Revision Requested**).
- S. Singh, A. Roy and M. P. Selvan, "Smart Load Node for Nonsmart Load Under Smart Grid Paradigm: A New Home Energy Management System," *IEEE Consumer Electronics Magazine*, vol. 8, no. 2, pp. 22-27, March 2019.
- S. Singh, S. Thirumalai and M. P. Selvan, "Realization of Self-Demand Response Through Non-Intrusive Load Monitoring Algorithm," In Proc. **2019 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)**, 26-27 Jul., Bangalore, India.
- S. Singh, A. Namboodiri and M. P. Selvan, "Simplified algorithm for dynamic demand response in smart homes under Smart Grid Environment," In Proc. **2019 IEEE PES GTD Grand International Conference and Exposition Asia (GTD Asia)**, Bangkok, Thailand, 2019, pp. 259-264.
- S. Singh and M.P. Selvan, "A Smart Energy Meter Enabling Self-Demand Response of Consumers in Smart Cities of Tamil Nadu," In Proc. **2019 IEEE International Conference on Smart Cities Model (ICSCM)**, 20-21 Jan., IIT Madras, India.
- P. Dinesh, K. Kumar Teja, S. Singh, M. P. Selvan, and S. Moorthi, "FPGA Based SoC Estimator and Constant Current Charging/Discharging Controller for Lead-Acid Battery," In Proc. **IEEE India International Conference (INDICON)**, 16-18 Dec., Coimbatore, India.
- S. Singh, Arun S.L., and Selvan M.P., "Regression Based Approach for Measurement of Current in Single-Phase Smart Energy Meter", in Proc. **IEEE Region 10 Symposium (TENSYP-2017)**, Cochin, India, 2017, pp. 1-5.

- **S. Singh**, Tarun Sharma, and Pankaj Bande, “Design and Implementation of Integrated Smart Township”, *IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE)*, vol. 11 (2), I, 2016, pp 18-24. (**B.Tech.**).

COMPLETED PROJECTS

National Institute of Technology Tiruchirappalli

Collaborated Projects

2017 – 18

- Online monitoring and control of a standalone micro-grid using Wi-Fi enabled wireless sensor nodes
- Constant current charge / discharge controller and State of Charge estimator for lead-acid batteries using FPGA
- Developed linear regression-based model to measure current in a single-phase smart energy meter
- Developed a simulation model of prepaid energy meter using Proteus® Design Suit and Microsoft® Visual C#
- Developed a Simulink® model of two-area network depicting performance improvement of power systems by using static synchronous series compensator (SSSC)

BBD Northern India Institute of Technology

Undergraduate Major Project

2013 – 2014

- Developed a human palm motion acquisition circuit using accelerometer to control a wheeled cum cylindrical robot

Vocational Summer Trainee

2013

- Undergone four-week vocational training at **Usha Martin Ltd, Ranchi, Jharkhand**
- Observed and learned Power & Control Circuit Applications in Electrical Drawing
- Exposed to operation of Usha Martin’s coal powered captive power plant (20MW)

Embedded Systems Experience

2012 – 2013

- Participated in development of wireless LED display on breadboards, supervised by PurpleLeap
- Participated in development of prototype of a IoT based smart township, supervised by PurpleLeap

PROFESSIONAL DEVELOPMENT / ACHIEVEMENTS

Massive Online Open Courses Certification (Verified Certificates of Accomplishment)

- Invited and completed *Coursera Mentor Community and Training Course*, **Coursera**
- A 5 – course specialization on “*Python for Everybody*”, **University of Michigan, USA** on *Coursera*
- A 6 – course specialization on “*Programming the Internet of Things*”, **University of California Irvine, USA** on *Coursera*
- A certification course on “*Mathematics for Machine Learning: Linear Algebra*”, **Imperial College, London** on *Coursera*
- A certification course on “*Using Python for Research*”, **Harvard University, USA** on *edX*
- A certification course on “*Introduction to Artificial Intelligence*”, **Microsoft** on *edX*
- A certification course on “*Smart Grids: Electricity for the Future*”, **IEEE** on *edX*

Workshop Attended

- Power Electronics for Renewable Energy Systems held at the Department of Electrical Engineering, IIT Kharagpur. **Grade: Ex**
- Intelligent Electrical Power Grids organized by Department of Electrical and Electronics Engineering, NIT Tiruchirappalli

Achievements

- Travel Grant by **IEEE Thailand** for attending **IEEE PES GTD Asia 2019**
- Ministry of HRD, Gov. of India scholarship at National Institute of Technology Tiruchirappalli during M.S (by Research)
- Qualified Graduate Aptitude Test in Engineering (GATE) 2016 in Electrical Engineering

Extra-Curricular Certifications

- Invited Mentor in an online MATLAB programming course by **Vanderbilt University, USA** on *Coursera*
- **Reviewer (IEEE): TPEC 2019 (Texas A&M Univ.), PECI 2019 (Illinois), IICPE–2018 (MNIT Jaipur)**
- A certificate of participation in an online global programming competition by CodeChef™
- Certificate of Merit in a robotics event at *Avishkar-2011*, technical fest of MNNIT Allahabad
- Student sub-coordinator of a seminar IT-FIESTA organized by Dept. of IT, BBDNIIT

TECHNICAL SKILLS / INTERESTS

Programming Languages	: Python, MATLAB Script, C
Libraries	: Matplotlib, NumPy
Development Boards	: Arduino boards, Raspberry Pi (3,2), Intel MCS51 and PIC18F4550
Software Packages	: Proteus design suit, Simulink / MATLAB, LTspice
IDEs	: Arduino, Spyder, Keil µVision, MPLAB
Protocols	: UART, I2C, TCP/IP, SPI, NEC
Sensors	: Voltage, Current, Temperature, Ultrasonic, Accelerometer and Proximity
Typesetting / Presentation	: Microsoft Word, Power Point, Visio, LaTeX, Beamer