SHASHANK SINGH

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🌐 https://ssingh0110.github.io

EDUCATION

National Institute of Technology Tiruchirappalli *Tiruchirappalli, India*
Master of Science (by Research) in Electrical & Electronics Engineering 2016 – 19
- **Thesis:** Realization of multi–agent system for residential demand response under smart grid paradigm
- *Relevant coursework*: Smart Grids, Power Systems; **CGPA: 9/10**

BBD Northern India Institute of Technology, Uttar Pradesh Technical University *Lucknow, India*
Bachelor of Technology in Electrical & Electronics Engineering 2010 – 14
- First Class Honours **Percentage: 78.6/100**

REFEREED PUBLICATIONS

[1] **S. Singh**, A. Namboodiri and M. P. Selvan, "Agent–based system to control the air–conditioner and EV charging for residents in smart cities," *IET Smart Cities*, **2019.** DoI: 10.1049/iet–smc.2019.0060

[2] **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.

[3] **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.

[4] **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.

[5] **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.

[6] 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.

[7] **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 (TENSYMP–2017)*, Cochin, India, 2017, pp. 1–5.

[8] **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.

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.

EXPERIENCE

Tata Communications Limited *Mumbai, India*
Product Management Specialist – Service Engineering 2019 – Present
- Associated with technical project delivery team & acting as an engineering Scrum–Master
- **Project domains:** Mobility, Blockchain

National Institute of Technology Tiruchirappalli *Tiruchirappalli, India*
Graduate Student Researcher 2016 – 19
- **Thesis:** Realization of multi–agent system for residential demand response under smart grid paradigm
- *Funding Agency*: Ministry of Electronics and Information Technology (MeitY), Government of India
- Multiple agents have been developed in the laboratory, which considers key grid parameters and key consumer parameters for the optimal operation of residential loads implementing demand response. The agents are namely smart energy meter, smart load nodes (SLN) for non–smart loads, SLN for thermostatically controlled loads, smart battery charge controller, and load management unit.

Teaching Assistance / Activities 2017 – 19
- Member of Executive Committee & Webmaster, IEEE Student Branch
- Committee Member and Software Developer – Proceedings of the 2018 National Power System Conference
- Mentored undergraduate students in various projects
- Assisted microprocessor and microcontroller, linear integrated circuits, and DC machines labs for undergraduate students

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   *Lucknow, India*
Undergraduate Major Project   2013 – 14
- 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 Limited, 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 – 13
- Participated in development of wireless LED display on breadboards, supervised by PurpleLeap
- Participated in development of prototype of an IoT based smart township, supervised by PurpleLeap

AWARDS / PROFESSIONAL DEVELOPMENT / ACHIEVEMENTS

Awards / Achievements
- **Best Master's Thesis Award** by International Society for Energy, Environment and Sustainability to be conferred in **Fourth International Conference on Sustainable Energy & Environmental Challenges, 2019** at **CSIR-National Environmental Engineering Research Institute**, Nagpur, Maharashtra, India
- Travel Grant by **IEEE Thailand Section** for attending **IEEE PES GTD Asia 2019**
- Ministry of HRD, Gov. of India scholarship at National Institute of Technology Tiruchirappalli during graduate studies
- Qualified Graduate Aptitude Test in Engineering (GATE) 2016 in Electrical Engineering

Massive Online Open Courses Certification (Verified Certificates of Accomplishment)
- Certified *Scum-Master* from **Scrum Alliance®**
- *IBM Blockchain Essentials* certification from **IBM**
- 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

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, Pandas
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, Microsoft Project