

JOYDIP ROY

joydipdns@gmail.com | +91-8820089259 | [LinkedIn](#) | [Google Scholar](#)
Bangalore, India

SUMMARY

Senior Electrical Engineer with over 5 years of industry experience and 4+ years in academic research. Currently working on an NPI engineering team in Honeywell. Experience in MEMS-based sensors for healthcare applications and related interfacing electronics, calibration, validation, and data analysis. Previously, worked on sensors & instrumentation system design as part of a research project at IIT Kharagpur. Holds MS (by Research) degree from IIT Kharagpur. Before that, worked for an EPC company involved in turnkey projects in ore and coal handling plants.

KEY SKILLS

Circuits: OPAMP circuits, Analog mixed signal (AMS) and switched capacitor filters - LCR, GIC, KHN, Sallen-Key, Data Converters, PLL and Oscillators, Noise & ENOB, Power supply, BMS, DC-DC converters, EMI / EMC filters.
ASICs/Microcontrollers: ASIC architecture (sensor bridge, pre-amp/amp, ADC, DSP, EEPROM). Arduino, Teensy, STM32, ESP32, Peripherals (GPIO, ADC, DAC, Flash/Registers), SPI, I2C, UART, CAN protocols.
Tools/Programming: MATLAB - Simulink, LT-Spice, Falstad-web, Autodesk Eagle, LabVIEW, Python, HTML/CSS, Java, C/C++, Arduino IDE, VS-Code, GitHub, Shell Scripting.
Lab Equipments: GPIB/ Serial/TCP-IP communication-based equipment, thermal & humidity chambers, NI-DAQs/MUX cards, Mass flow controllers, Digital multimeter (DMM), Function generator, Power supply, SMPS, Digital Storage Oscilloscope (DSO), Impedance/LCR meter, Spectrum analyzer & VNA, Soldering station.
Project Planning: Idea incubation, Elevator pitch, Market survey, VOC, Competitor Benchmarking, Revenue Stream/Cost Structure, Value proposition, Innovation quadrant, NPI - DFMEA, MRS/PRS, CTR/CDR, Jira-Scrum, Project Accolade, PLM, Six-sigma tools.
Industry: IEC - 60601 and 61000 standards, Electrical substation (Switch-gears & Control panels, PLC/RIO/HMI, Transformers & Bus-Ducts), Conveyor systems & drives, Conveyor safety switches and BWS, Engineering drawings/ Scheme diagrams, Site-coordination and Equipment Inspection.

EDUCATION

Degree/Exam	Institute	CGPA/Marks	Year
MS (by Research) (Electrical Engineering)	Indian Institute of Technology, Kharagpur	9.2 / 10	2024
B.Tech. (Electrical Engineering)	Meghnad Saha Institute of Technology, Kolkata	8.41 / 10	2015
AISSCE/CBSE (Pure Science-CS)	The Pentecostal Assembly School, Bokaro	83.6%	2011
ICSE/CISCE	De Nobili School (CFRI), Dhanbad	89.57%	2009

WORK EXPERIENCE

Honeywell Technology Solutions Pvt Ltd, Bangalore, India

June 2022 – Present

Electrical Engineer - II

- Test system setup for MEM-based sensor calibration, test plan and timeline, performance evaluation, failure analysis, EMI/EMC testing, root cause analysis, hypothesis testing and engineering report creation.
- Contributed to developing MEM-based sensor, released as an MVO1 in December 2024. Responsibilities included sense die & ASIC integration, schematic & PCB layout bringup, component selection, firmware upload & validation, calibration, testing, performance evaluation with reliability tests. Using LabVIEW and Python-based UI tools.
- Innovated an image-based solution, recognized as a Trade Secret in July 2024. Participated in an innovation hackathon, where a noninvasive healthcare solution idea was selected among the top 27 out of nearly 400 submissions in Honeywell's SPS Business Group.

Indian Institute of Technology, Kharagpur, India

October 2017 – June 2022

Senior Research Fellow and Junior Research Fellow

- Worked on a SERB-DST sponsored project at IIT Kharagpur, developing an automated water quality monitoring system. Responsibilities included developing an electrochemical sensor, based on impedimetric sensing, calibration, characterization, related (mixed) signal conditioning circuit, data converter, data processing, and algorithm implementation on a custom PCB (SMD components), battery operated with BMS, Wi-Fi/BLE communication and data logging with TCP-IP/Android App. This work culminated in the publication of an SCI-indexed journal and conference. **Keywords:** OPAMP, phase detector, filter, rectifier, mixed-signal, comparator, XOR gate, ADC, moving average, accuracy, precision, Li-ion BMS, impedance spectroscopy, Falstad, COMSOL, MATLAB-Simulink, ESP32, I2C, Autodesk Eagle, PCB, DSO, LCR meter, SEM, OTA update, API Key.

GET and Engineer Electrical

- Worked in an EPC company undertaking turnkey projects. Was involved in coordinating site works from erection to commissioning related to belt conveyors, drives, HPC / PLC, PMCC, substations (LT / HT), wagon tipplers, in the Bhilai Steel Plant OHP and CHP. Later, was responsible for the engineering and design planning of CHP DVC Bokaro. Work involved cable layout plan, illumination layout, cable termination schedule, earthing and lightning plans, purchase orders and inspections at vendor sites. Also was responsible for preparing bill of materials for electrical works and frequent site visit for co-ordination.

AWARDS AND ACHIEVEMENTS

GATE Rank holder: *Qualified and secured **AIR-1650 (PERCENTILE- 98.7%)** in Electrical Engineering (EE) paper of Graduate Aptitude Test in Engineering (GATE) 2015*

Principals Award: *Received **Principals Award** in 2009 (at the end of secondary school) for high achievements in studies and notable service to others along with being an active member and Vice President of Science club (Physics dept.). Was accepted as a member of the **De Nobili Honor Society** of De Nobili School, FRI, Digwadih, Dhanbad.*

TRAININGS AND CERTIFICATIONS

LabVIEW Classroom Training: *Undergone an instructor-led classroom training program (June-August, 2023) on LabVIEW Core 1, Core 2 & Core 3 in Honeywell (HTS-SPS).*

Matlab Simulink: *Successfully completed "30 Days Master Class on Matlab Simulink" at Pantech Prolabs India Pvt Ltd in association with Andhra Pradesh State Skill Development Corporation (APSSDC) from Nov 23 to Dec 22, 2020.*

Essentials of Entrepreneurship: Thinking & Action: *Successfully completed an online non-credit course in Coursera on "Essentials of Entrepreneurship: Thinking & Action" authorized by University of California, Irvine.*

Vocational Training: *Undergone vocational training (24 June - 14 July 2014) at Mills and Utilities Electrical Maintenance department of TATA Steel Limited, Jamshedpur on project titled "To Study BLA PLC at HSM (Hot strip mill)". Earlier trained at 10MW Power Plant, Jamadoba in TATA Steel Limited, Jharia division, (23 Dec, 2013 to 06 Jan, 2014) as a partial fulfillment of curriculum required for B.Tech degree. The training and report was on "Transformer Parts, Protection, Testing and Maintenance".*

PUBLICATIONS

- Avishek Adhikary, **Joydip Roy**, Anaparthi Ganesh Kumar, Susanta Banerjee, and Karabi Biswas. "An Impedimetric Cu-Polymer Sensor Based Conductivity Meter for Precision Agriculture and Aquaculture Applications." in IEEE Sensors Journal 19, no. 24 (2019): 12087-12095.
- Avishek Adhikary, **Joydip Roy**, and Karabi Biswas. "Performance study of a two-electrode type aqueous conductivity sensor for smart farming." In 2019 IEEE International Instrumentation and Measurement Technology Conference (I2MTC), pp. 1-6. IEEE, 2019.

POSITIONS OF RESPONSIBILITY

Teaching Assistant: Teaching Assistant for Electrical Technology (EE11003) Tutorial for the spring 2021 semester. Was responsible for the grading of homework.

Organizer of FOS 2020 and FOS 2018: Was an organizing committee member of the workshop on Fractional Order Systems (FOS'20 and FOS'18) held at the EE Department of IIT Kharagpur.

Organizer of DAIS 2019: Was an organizing committee member of the AICTE-QIP sponsored short-term course named Data Analytics for Instrumentation System (DAIS'19) held at the EE Department of IIT Kharagpur.

Vice President of Science Club: Vice President of Science club (Physics dept.) in secondary school. Was an active member of the club and presented various scientific models, charts, experiments, and exhibitions.

EXTRA CURRICULAR ACTIVITIES

- Actively participated in quizzes (Environmental quiz-1st prize, GK quiz-3rd prize, Science quiz-runners-up), competitions (Sit and draw-1st prize, IQ test-1st prize, Maths olympiad, NSO, NSTSE, singing, elocution, extempore, annual sports), and school clubs (GK, Science and Geography club)
- Participated and organized annual exhibitions in school. Won the "Best Model Award" for a scientific demonstration during the science exhibition.

LANGUAGES KNOWN

English, Bengali, Hindi and German (A1).