Subham Das

IISER Bhopal, Madhya Pradesh, India 462066
(+91) 6302218994 subham.ds@gmail.com https://www.linkedin.com/subham github.com/subham23

Education

Indian Institute of Science Education and Research (IISER) Bhopal **Aug. 2018 – Jun. 2023**
BS-MS in Electrical Engineering and Computer Science, Minor in Biological Sciences *Madhya Pradesh, India*
- CPI: **9.46** (on a 10-point scale) (**Transcript**)

Our Own English High School, Sharjah, Boy's Branch **2018**
AISSE-CBSE CLASS 12 *Sharjah, UAE*
- Percentage: **96.2**% - Science Stream

Our Own English High School, Sharjah, Boy's Branch **2016**
AISSE-CBSE CLASS 10 *Sharjah, UAE*
- CGPA: **10** (on a 10-point scale)

Relevant Coursework

- Introduction to MEMS
- Smart Sensing Devices
- Machine Learning
- Immunology & Signaling
- Epigenetics
- Molecular Biology
- Analog & Digital Circuits
- Digital Image Processing
- Internet of Things
- Multivariable Calculus
- Biostatistics
- Bioinformatics

Publications [Google Scholar, ORCID]

Patent(s)

1. Mitradip Bhattacharjee, Subham Das, "A multisensor assisted system for diagnostics, disease detection, and thereof", (Indian Patent Appl. under processing) 2022.
2. Mitradip Bhattacharjee, Subham Das, "A system for image analysis based colorimetric sensing", (Indian Patent Appl. under processing) 2022.
3. Mitradip Bhattacharjee, Ariba Siddiqui, Subham Das, "A multi-organ theranostic device ", (Indian Patent Appl. under processing) 2022.

Journal Article(s)

1. Subham Das, Mitradip Bhattacharjee, "Image based Sensing of Leukonychia for Early Diagnosis of Anemia using a Smartphone Application", IEEE Sensors Letters (doi:10.1109/LSENS.2022.3217010)
2. Subham Das#, Athul Krishnan#, Mitradip Bhattacharjee, "Flexible Piezoresistive Pressure and Temperature Sensor Module for Continuous Monitoring of Cardiac Health", IEEE Journal on Flexible Electronics 2023 (doi:10.1109/JFLEX.2023.3243877)(# Equal contribution)
3. Ariba Siddiqui, Subham Das, Mitradip Bhattacharjee, "Acoustic Sensing Response in Human Tissues for Theranostics and Implants", IEEE Sensors Letters (doi:10.1109/LSENS.2023.3251991)
4. Chirantan Das, Subham Das, Vibhas Chugh, Mitradip Bhattacharjee, "3D Printed Mask-Assisted Non-Enzymatic Detection of Glucose from Impedimetric and Voltammetric Studies", (Under Review)
5. Subham Das, Mitradip Bhattacharjee, Karthick Thiyagarajan, Sarath Kodagoda, "Conformable Packaging of a Soft and Flexible Pressure Sensor for Tactile Perception", (Under Review)
6. Tapas Kumar Dutta, Subham Das, Madhurima Sarkar, Mitradip Bhattacharjee, Abhijit Patra, "Multistate Electrochromism with Covalent Organic Framework Film for Monitoring Safety of Electronic Systems", (Under Review)
7. Subham Das, Mitradip Bhattacharjee, Karthick Thiyagarajan, Sarath Kodagoda, "Skin-inspired Multimodal Tactile Sensing with Multilayer Perceptron Network for Terrain Recognition", (Manuscript Preparation in Progress)

Conference Publication(s)

1. Ariba Siddiqui, Subham Das, Mitradip Bhattacharjee, "Acoustic Power Distribution Analysis in Different Human Tissues for Bioimplant Application", IEEE International Students' Conference on Electrical, Electronics and Computer Sciences (SCEECS), Bhopal, India, February 2023 [doi:10.1109/SCEECS57921.2023.10062978].

Work and Research Experience

Junior Research Fellow at i-Lab, IISER Bhopal **May 2023 – Ongoing**

Intern at Intisen Pvt. Ltd **August 2022 – Ongoing**

Product Design and Development *Bhopal, India*

- Developing innovative technologies such as sensors, electronic systems, smart materials, medical devices, and IT solutions for a better society. Developed flexible health band and e-health phone applications, designed packaging of a smart mask device.

Polymer-based Flexible Sensors for Tactile Sensing - Master's Thesis **August 2022 – April 2023**

Supervised by Dr.Mitradip Bhattacharjee (Dept. of EECS) *IISER, Bhopal, India*

- Developed a coupled pressure-temperature sensor setup that is capable for identifying the terrain it is placed on by analyzing the pressure profile and radiated heat of the surface. It is also capable of detecting nature of surface and can withstand high pressure.

Wearable Printed Sensors for Monitoring Patient Health **May 2022 – August 2022**

Supervised by Dr.George Knopf (Dept. of Mechanical and Materials Engineering) *University of Western Ontario, Canada*

- Developed a multi-purpose printable electronic sensor circuit for a variety of wireless devices that can monitor patient health. Fabricated the prerequisite, chipless readout system, with RFID frequency (13.56 MHz) and the components being purely RLC based. The system is such that any sensor can be replaced into the circuit and a reading obtained.

Developing a Database of Synthetic Logic Gates using NLP and ML **May 2021 – December 2021**

Supervised by Dr.Areejit Samal (Dept. of Computational Biology) *IMSc, Chennai, India*

- A database with compiled information regarding all synthetic logic gates discovered to date. The data was analysed using NLTK to give a suitable PUBMED search query and a sum total of 750+ logic gates were documented.

Phone Application For Health Monitoring - Bachelor's Thesis **June 2021 – April 2022**

Supervised by Dr.Mitradip Bhattacharjee (Dept. of EECS) *IISER, Bhopal, India*

- Developed an application that can provides data for four diagnostics (heart rate, oxygen level, blood pressure, and temperature) and predicts two diseases (arrhythmia and anemia). This is done using image processing techniques and a custom designed PCB.

Projects

Stamp embedded and mask embedded microfluidic device design | *Solidworks, 3D printing* **January 2023**

Polymer-based flexible ultrasonic band for diagnostics | *COMSOL, Arduino* **August 2022**

Detection of Parkinson's Disease | *ML and Deep Learning* **April 2021**

Thermal and Pressure Sensor PCB Design | *Altium* **December 2021**

Technical Skills

Coding Languages: Python, C, HTML/CSS, MATLAB, R
Simulation Tools: COMSOL, Simulink, Ansys-HFSS
Modeling & **Electronics** : Blender, Solidworks, Arduino, ADS, NI Multisim, Altium Designer, Proteus 8
Electrical : Filter Circuit Design, Analysis of MOSFET Characteristics, Designing Amplifier Circuits Using OP-AMPS
Experimental : Electrochemical (CV) and Electrical Impedance Spectroscopy (EIS), Synthesis of polymer based sensors, Electrospinning, Spin coating, SLA and FDM 3D printing
Others : Adobe Premiere Pro, Adobe After Effects, LaTeX
Languages : English (IELTS 7.5 | W=7.5, R=8, L=7.5, S=7), Hindi (fluent), Odiya (fluent), French (basic), Arabic (basic)

Awards / Co-Curricular Activities

Teaching Assistant **2023**

- ECS413/613 Smart Sensing Technologies

MITACS Globalink Research Internship **2022**

- Selected for MITACS summer internship 2022, a training opportunity to perform research in Canadian universities

Reviewer for IEEE Applied Sensing Conference (APSCON) **2022**

Indian Academy of Science Summer Research Fellow **2021**

- Selected for IAS SRFP 2021, a programme which supplements research activities that occur during the academic year.

Vijyoshi - National Science Camp **2018**

- Took part in the National Science Camp organized by KVPY-IISc and Inspire at IISER Bhopal campus.

19th SOF National Science Olympiad **2017**

- Zonal Rank '2' in 19th SOF National Science Olympiad – was awarded a Silver Medal.

Brain O'Bee **2016**

- Participated in Inter School Neuroscience Competition (Brain O'Bee) held by Manipal University, Dubai.

Secretary of Cultural Council IISER Bhopal **2020 – 2021**

Member of Unnat Bharat Abhiyan **2021 – 2022**

- A government initiative for the upliftment of rural areas.

REFERENCES

Dr. Mitradip Bhattacharjee: Asst. Professor, Dept. Electrical Engineering and Computer Science, IISER Bhopal, India
Dr. George K. Knopf: Professor, Dept. Mechanical and Materials Engineering, University of Western Ontario, Canada
Dr. Areejit Samal: Professor, Dept. Computational Biology, IMSc Chennai, India