

SUBHAM DAS

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Education

Indian Institute of Science Education and Research Bhopal

Aug. 2018 – Jun. 2023

BS-MS in Electrical Engineering and Computer Science, Minor in Biological Sciences

Madhya Pradesh, India

- CPI: **9.41** (on a 10-point scale) - Till 9th Semester ([Transcript](#))

Our Own English High School, Boy's Branch

2018

AISSE-CBSE CLASS 12

Sharjah, UAE

- Percentage: **96.2%** - Science Stream

Our Own English High School, Boy's Branch

2016

AISSE-CBSE CLASS 10

Sharjah, UAE

- CGPA: **10** (on a 10-point scale)

Relevant Coursework

- | | | | |
|-------------------------|--------------------------|-----------------------------|--------------------------|
| • Introduction to MEMS | • Immunology & Signaling | • Analog & Digital Circuits | • Multivariable Calculus |
| • Smart Sensing Devices | • Epigenetics | • Digital Image Processing | • Biostatistics |
| • Machine Learning | • Molecular Biology | • Internet of Things | • 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 Thiagarajan, Sarath Kodagoda, "Tactile Perception with a Soft Flexible Capacitive Pressure Sensor Skin for Surface Identification", (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", (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

Polymer-Based Pressure Sensor for Terrain Identification - Master's Thesis August 2022 – Ongoing
Supervised by Dr.Mitradiip Bhattacharjee (Dept. of EECS) IISER, Bhopal, India
• Developed a capacitive pressure sensor that is capable for identifying the terrain it is placed on by analyzing the pressure profile of the surface. It is also capable of detecting nature of surface and can withstand high pressure.

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.

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.Mitradiip 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

- ECS413/613 Smart Sensing Technologies (2023)

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
<ul style="list-style-type: none"> • Took part in the National Science Camp organized by KVPY-IISc and Inspire at IISER Bhopal campus. 	
19th SOF National Science Olympiad	2017
<ul style="list-style-type: none"> • Zonal Rank ‘2’ in 19th SOF National Science Olympiad – was awarded a Silver Medal. 	
Brain O’Bee	2016
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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