

SUBHAM DAS

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Education

Indian Institute of Science Education and Research Bhopal

Aug. 2018 – Jun. 2022

Bachelor of Science in Electrical Engineering and Computer Science

Madhya Pradesh, India

- CPI: **9.32** (on a 10-point scale) - Upto 7th Semester

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

- | | | | |
|-------------------------|--------------------------|-----------------------------|--------------------------|
| • Data Structures | • Immunology & Signaling | • Analog & Digital Circuits | • Multivariable Calculus |
| • Theory of Computation | • Epigenetics | • Digital Image Processing | • Quantum Physics |
| • Machine Learning | • Molecular Biology | • Control Systems | • Organic Chemistry |

Research Experience

Developing a Database of Synthetic Logic Gates using NLP and ML

May 2021 – Ongoing

Supervised by Dr.Areejit Samal (Dept. of Computational Biology)

IMSc, Chennai

- The database prepared provides information regarding the input, output, and species originated from along with the paper referenced and its author, of all synthetic gates that have been discovered to date.
- The data was analysed using NLTK to give a suitable PUBMED search query. Further work is being done to provide a novel application of the dataset. The 589+ logic gates documented can serve as a method to modify cellular functions, create cellular responses to environmental conditions, or influence cellular development.

Multi-sensor Integration with Arduino for PoC Applications

June 2021 – December 2021

Supervised by Dr.Mitradip Bhattacharjee (Dept. of EECS)

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- Multiple sensors - heart rate, pressure, humidity, pH, temperature, oxygen - were integrated with Arduino and the data was sent to a custom made mobile app using a HC-05 Bluetooth module.
- Additionally, a mobile plethysmograph, oximeter, ultrasound sensor, and pH detector were developed utilizing Flutter/Android Studio as a development environment in order to visualize the application in both iOS and Android.
- Analyzing the heart rate can help us identify different heart defects, such as arrhythmia.

Microchannel-Based Chemical UV Dosimeter - Bachelor's Thesis

January 2022 – May 2022

Supervised by Dr.Mitradip Bhattacharjee (Dept. of EECS)

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- The setup is based on a flexible substrate. By adjusting the chemical concentration and/or changing it, we can detect different types of ionizing radiation. Simulations and modeling is performed on COMSOL and Blender
- Such a radiation detector can be used for measuring the dose received by the person exposed in his workspace and also measure the dose for patients where nuclear radiation is used for treatment.

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

- Developing a multi-purpose printable electronic sensor circuit for a variety of wireless devices that can monitor patient health

Projects

Interfacing Arduino with LM35 and Thermistor | *Arduino* March 2021

- A comparative study to determine the error, range and efficiency of the two most commonly used thermal sensors.

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

- Using the dataset provided by University of Oxford we check the probability of a patient having Parkinson's disease given different attributes and characteristics. We compare the probability values using different machine learning techniques to determine the most accurate one for our dataset.

Vahan Netra - Vehicle Vision (Startup) | *Blender, Proteus 8* August 2021

- A safety helmet designed to reduce on road accidents of Light Motor Vehicles (LMV). Includes proximity sensor with speaker and camera.

Analysis of Gene Expression in Yeast | *R, Bio-conductor* October 2021

- Differential gene and transcript expression analysis of RNA-seq experiments with TopHat and Cufflinks.
- CummeRbund, Integrative Genomics Viewer (IGV), and Gene Ontology Profiling analysis was done to see how the differentially expressed genes contribute in different biological processes, molecular functions, cellular compartments, and pathways they are involved in.

Thermal and Pressure Sensor PCB Design | *Altium* December 2022

- Designing PCBs that are capable of taking temperature and pressure readings, thereby negating the need to use Arduino boards along with separate sensors.

Technical Skills

Languages: Python, Java, C, HTML/CSS, JavaScript, MATLAB, Dart, R

Simulation Tools: COMSOL, LabView, Simulink

Modeling & Electronics : Blender, FreeCAD, Arduino, LTSpice, Altium Designer, Proteus 8

Experimental : Synthesis and Analysis of Salts - Chemistry, Physical and Chemical Analyses of Crude and Refined Oils - Chemical Engineering

Electrical : Filter Circuit Design, Analysis of MOSFET Characteristics, Designing Amplifier Circuits Using OP-AMPS

Others : Adobe Premiere Pro, Adobe After Effects, LaTeX

Leadership / Extracurricular

MITACS Globalink Research Internship 2022

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

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.