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 Bhopal **Aug. 2018 – Jun. 2022**
Bachelor of Science in Electrical Engineering and Computer Science *Madhya Pradesh, India*

- CPI: **9.17** (on a 10-point scale) - Upto 6th 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
- Theory of Computation
- Machine Learning
- Immunology
- Cell Signaling
- Molecular Biology
- Analog & Digital Circuits
- Signals & Systems
- Control Systems
- Multivariable Calculus
- Quantum Physics
- 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.
- We have documented AND gates, Buffer gates, Combinatorial gates, NAND gates, NOR gates, NOT gates, OR gates, XOR gates, and other gates across many species (Human, Escherichia coli and Bacillus clausii, Yeast, etc.). Currently, we have a total of 389 such logic gates.
- These circuits 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 – Ongoing**
Supervised by Dr.Mitradip Bhattacharjee (Dept. of EECS) *IISER, Bhopal*

- 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.
- The setup was made into a portable form factor to enable point of care testing as a future application.
- Additionally, a mobile plethysmograph and color detector were developed utilizing Flutter 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, by calculating the standard deviation for the time between each heartbeat. The time between each beat would be quite different for a person who has an arrhythmia disease.

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.

Non-Invasive Lab on Chip Device | *COMSOL, Blender* **December 2020**

- Simulating and testing the working of a portable LoC device, and analyzing its functions.
- A reading project on MEMS with a special emphasis on Bio-MEMS. Project includes researching on a possible (non-existing) MEMS device, its working and engineering problems involved in developing such an equipment.

Technical Skills

Languages: Python, Java, C, HTML/CSS, JavaScript, MATLAB, Dart
Simulation Tools: COMSOL, LabView, Simulink
Modeling & **Electronics** : Blender, FreeCAD, Arduino, LTSpice
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

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**