Parag Sarvoday Sahu

Pre-Final Year Undergraduate
Major in Electrical Engineering with Minors in Computer Science and Engineering
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ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
B.Tech.	*Electrical Engineering*	IIT Gandhinagar, India	2022-Present	8.56(/10)
Class XII	*Physics, Chemistry, Maths*	Chhattisgarh Public School, Raipur	2020-2021	95.8
Class X		Chhattisgarh Public School, Raipur	2018-2019	94

INTERNSHIPS

- **Summer Research Intern, Photonic Sensors Lab, SRIP '24, IIT Gandhinagar** [May '24 - June '24]
  (Advisor - Prof. Arup Lal Chakraborty, IIT Gandhinagar) | GitHub Repo
  - Worked on developing a mobile ambient methane gas concentration detection setup.
  - Understood the working of a lock-in amplifier and worked on its implementation on an FPGA board. Demonstrated the working of the Lock-in amplifier for pure tones of sine waves.
  - Implemented Serial Peripheral Interface (SPI) protocol-based high-speed data transfer between an FPGA board and a Raspberry Pi.
  - Reviewed literature and understood the principle of Tunable Diode Laser Absorption Spectroscopy (TDLAS).
  - Learnt to work with the lab's TDLAS setup comprising of Quantum Cascade Laser (QCL), mid-IR photodetector, laser controller and lock-in amplifier (LIA).

PROJECTS

- **Learning-Based Inverse Subsurface Scattering for Heterogeneous Participating Media** [Aug '24 - Nov '24]
  (Advisor - Prof. Shanmuganathan Raman, IIT Gandhinagar)
  - Estimated subsurface scattering parameters of translucent objects using learning based approach to get their accurate 3D reconstruction.
  - Constructed a large-scale synthetic dataset using Mitsuba 3 tool to help train the network.
- **Implementation of various Image Processing Algorithms** [Aug '24 - Nov '24]
  (Advisor - Prof. Shanmuganathan Raman, IIT Gandhinagar) | *GitHub Repo*
  - Implemented image processing algorithms such as Canny edge detector, Harris Corner detector, optical flow estimation, and panorama stitching.
- **In-Band Full Duplex Radios with Self-Interference Cancellation in Non-Gaussian Environments** [Jan '24 - April '24]
  (Advisor - Prof. Nithin V. George, IIT Gandhinagar) | *Video Presentation*
  - Reviewed literature and understood the idea of In-Band Full Duplex Radios.
  - Implemented the Steepest Descent algorithm for Self-Interference cancellation for both batch-based and online processing of data on MATLAB.
  - Experimented with the noise environments and found the algorithm failing for Non-Gaussian noise environments.
  - Reviewed literature and understood the semi-empirical mass formula.
  - Implemented gradient descent algorithm to estimate parameters using Python language.
- **Data Analysis of various real-world datasets** [February '23 - April '23]
  (Prof. Shanmuganathan Raman, IIT Gandhinagar) | GitHub Repo
  - Applied various data analysis techniques such as data cleaning, processing and data visualisation.
  - Learnt asking meaningful questions to extract insights from a given dataset.

ACHIEVEMENTS

- Presented with the prestigious **Prof DV Pai Scholarship** for Academic and overall excellence at IIT Gandhinagar for AY 2023-24.
- Stood in the **top 1 per cent** amongst over a million students who appeared in the **Joint Entrance Examination** for admission into IITs in 2022.
- Stood 1st in the Chhattishgarh region amongst a total of 11 thousand participants in the **National Anveshika Experimental Skills Test (NAEST)** organised by the Indian Association of Physics Teachers (IAPT) in the year 2020. NAEST tests the observational skills, concepts and experimental skills of students in Physics.

TECHNICAL SKILLS

- **Programming Languages:** Python, Verilog, MATLAB, C++
- **Tools:** MATLAB Android Simulink, Mitsuba 3, Xilinx Vivado, Git, Arduino IDE, Notion, Autodesk Inventor
- **Libraries:** NumPy, Pandas, Matplotlib

RELEVANT COURSES

- **Computer Vision**, Machine Learning, Data Structures and Algorithms, Digital Signal Processing, Signals Systems and Random Processes, Probability Statistics and Data Visualisation, Numerical Methods, Data-Centric Computing, Calculus of Single Variable and Linear Algebra, Digital Systems, Principles and Applications of Electrical Engineering, Biology for Engineers.