Saswata Dasgupta

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
M.S (Research) in Space Science Engineering	Indian Institute of Technology Indore	9.83 (Current)	2021-Present
B.Tech. Electronics and Communication Engineering	M.C.K.V Institute of Engineering, Kolkata	8.69	2015-2019

Experience

- **Robert Bosch Engineering and Business Solutions** *Aug 2019 - Aug 2020*
  Associate Software Engineer Coimbatore
  – Worked as a full time Hardware Integrator at Robert Bosch Engineering and Business Solutions Private Limited with Chinese OEMs (LOVOL, FAWDE and others) for Off Highway vehicle Engine Control Units

Projects

- **Analysing HI 21-cm images from the Epoch of Reionization using Largest Cluster Statistics** *Jan. 2022 - Present*
  Dr. Suman Majumdar and Prof. Abhirup Datta Github
  – Presently working on analyzing and developing a Machine Learning assisted Bayesian interpretation pipeline for the CD-EoR 21-cm tomographic images (to be produced by the SKA) using a novel statistic – Largest Cluster Statistics (LCS) to understand the topological and morphological evolution of the ionized regions of hydrogen during this era and draw inferences on the ionizing sources and the IGM properties.
  – **SKA Science Data Challenge 3**: The aim of this project is to get the radio-astronomical community ready for the innovative data that the Square Kilometre Array is projected to produce. Given the order-of-magnitude increase in sensitivity, new analytic techniques are needed to address the demanding nature of the produced data as well as unexplored scientific areas. In order to verify the effectiveness of current methods and encourage the creation of new ones on these next-generation, scientific datasets, realistic, synthetic datasets simulating the capabilities of the telescope will be made available to the community.
  – **Astro Hack Week 2022 - Max Planck Institute for Astronomy:** Prediction of neutral fraction ($\bar{x}_{HI}$) from HI 21cm images using Convolutional Neural Network (CNN).
  – Cosmological parameter estimation using Bayesian inference on supernova 1a data

- **Digital Telescope - Star finder using Arduino and Stellarium** *Jul. 2018 - Jul. 2019*
  Dr. Krishnendu Chattopadhyay Academia
  – My B.Tech final year project was to develop a cost-effective device to make a star tracking system using an Arduino DUE and Stellarium. We used Stellarium and linked it with an analog telescope using the Meade LX 200 protocol. Whichever sky object the user pointed to by clicking on the interface of Stellarium, the telescope rotated and pointed itself to that direction by the help of Arduino DUE controlled stepper motors and an accelerometer.
  – Cosmological parameter estimation using Bayesian inference on supernova 1a data

- **Digital Interferometer - measurement of very small dimension of a given sample** *Apr. 2016 - Jun 2018*
  Dr. Tanmoy Roy Choudhury and Dr. Dipankar Ghosh Academia
  – During my Bachelor's I developed a "Digital Michelson Interferometer" which could measure the width of a very thin silver coating on a glass slab. It was a Michelson interferometer digitized using an Arduino DUE with the help of Light Detecting Resistors (LDR). The reported value of the thickness of the coating was 0.25 µm, and our measured value was 0.174 µm.

Technical Skills

- **Programming**: Python, C/C++, SQL*, MATLAB, SPICE
- **Simulations**: N-body simulations, FoF Halo finder, 21cmFAST, ReionYuga
- **Tools/Frameworks**: Keras, Tensorflow, Pytorch*, AWS*

** Elementary proficiency*

Publications

- **Journal:** ,Aadarsh Pathak, Satadru Bag, **Saswata Dasgupta**, Suman Majumdar, Rajesh Mondal, Mohd Kamran, Prakash Sarkar,
  Distinguishing reionization models using the largest cluster statistics of the 21-cm maps,
  published in JCAP, arXiv no: 2202.03701 *2018*