Deep Prakash Ghuge

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PROFILE

- I'm passionate about the confluence of astronomy, data science, and statistics. My core interests have always revolved around observational astronomy. I specialize in modeling and analyzing the data from the Sun and other astrophysical systems. My research interest lies in analyzing heliophysical data to uncover underlying physical phenomena and, furthermore, look at their impact on Earth's geophysical systems.

EDUCATION

- **Integrated B.S. - M.S. Dual Degree in Physics**
  (Currently a Master's Student)
  IISER Pune — 2019 - Present
  Pune, India

- **Higher Secondary / (Physics, Math and Electronics)**
  AUBHS Junior College — 2017 – 2019
  Pune, India

- **Secondary / (Physics and Math)**
  Podar International School — 2016-2017
  Parbhani, India

SOME RELEVANT COURSES STUDIED AT IISER PUNE

- **PH4263**: Astronomy and Astrophysics (Based on Astrophysical processes and Plasma physics) — 2023
- **PH4173**: Fluid Dynamics — 2022
- **PH3264**: Computational Physics — 2023
- **DS3213**: Data Science (Also, TD2223: Data Analysis was taken as part of compulsory courses) — 2023
- **DS3114**: Bio-informatics (Based on Machine-Learning Algorithms) — 2022

ACHIEVEMENTS / AWARDS

- Selected as Subject matter expert (SME) at Chegg.Inc for Advanced Physics and was consistently one of the top performers.
- Finished in top 2.4% in IIT JEE exam (largest national level science exam in India for admission in top Universities in Science and Engineering in India)
- Project completed at Wolfram was selected for the editorial column in the community by Wolfram Research.

AFFILIATIONS

- **Subject Matter Expert (SME) for Advanced Physics**
  Chegg.Inc — January 2021 - Present
- **Data Consultant**
  Kei Technologies — July 2022 - Present

PROJECTS & CONTRIBUTIONS

Mentor	Institute associated	My work	Duration
Supervisor: Prof. Prasad Subramanian Expert: Prof. Bhas Bapat (Master's Project)	IISER Pune, India	Characterizing turbulence within the Coronal Mass Ejection (CME) sheath region by examining high-frequency fluctuations in magnetic field, velocity, and density power spectra through Fourier and Wavelet decomposition. Aiming to distinguish boundaries of sheath, magnetic cloud, and ambient solar wind. Also Investigating the impact of these high-frequency fluctuations on Earth's magnetic field through correlation using the Dst Index.	June/23 - Present
Dr. Devendra Siingh and Dr. Jeni Victor	IITM Pune, India	Involved in satellite data processing to look for changes in spatial patterns of lightning during the period of covid lockdown due to decrement in aerosol concentration.	Nov/22 - Dec/22
--	[Internship] Kei technologies, Nagpur India (remote)	Developed a JavaScript-based automation script for the marketing team, enabling the customized generation of PDFs and emails directly from Google Sheets. Designed for use by marketing professionals, the script efficiently handles the creation and distribution of approximately 1000 PDFs within 15 minutes. I'm also Currently connected to them as a consultant, providing assistance with marketing data.	May/22-July/22
Dr. Sotiris Michos	AUT Greece/ Wolfram data School (remote)	Attempted to classifiy galaxies, quasars, and stars (from SDSS database) based on the photometric data of the telescopes with Desicion Trees, Naive Bayes, Markov Chains, Gradient Boosted Trees and Neural Network Algorithms. Compared and analyzed the astronomical feature importance across all models with Shapley values and Performed exploratory data analysis with the dataset to find patterns and anomalies.	Dec/22-Jan/23

Self Motivated Project:

LSTM Based realtime Dst Index Prediction	Developed a Flask web application featuring an LSTM-based real-time Disturbance Storm Time (Dst) index predictor. The application integrates Selenium for web scraping, fetching data from NASA and SIDC URLs, and leverages a trained LSTM model for accurate hourly predictions. The development of this model involved substantial feature engineering to address irregular input column sizes.	Nov/23-Dec/23

Access the source code repositories for my projects by clicking here

SKILLS

- **Programming and Scripting Languages**
  Python, Fortran, Wolfram Language, JavaScript, HTML, LaTeX
- **Tools,Libraries and softwares**
  Mathematica, TensorFlow, Pandas, NumPy, Matplotlib, Selenium
- **Technologies**
  Git, GCP, Linux
- **Languages**
  English (Full Professional Proficiency), Hindi (Native)

EXTRACURRICULAR ACTIVITIES

- Established and oversaw a non-profit initiative leveraging a personal website for soliciting donations to procure clothing and blankets for the homeless on a localized scale. Proficiently employed paid digital advertising strategies while adhering to budget constraints. (2020)
- I'm an active member of the Entrepreneurial cell of IISER Pune, and also enthusiastic about Entrepreneurship.
- I'm a Competitive Archery Player. I have Played at the CBSE National level Archery Championship after moving up from State and District level. (2017)