RISHABH SOLANKI

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OBJECTIVE

Physics Graduate with expertise in numerical simulations, machine learning, and data analysis. 5+ years of experience in Python, Java, and SQL, specializing in algorithm development and optimization to tackle large and complex datasets. Proficient in utilizing Linux and Git to streamline workflows and collaboration. Seeking a role in data science where I can apply my computational and analytical skills to drive innovation and progress.

EDUCATION

University of Massachusetts Dartmouth, Master of Science in Physics — Expected May 2023
GPA 4.0 Relevant Coursework: Linear Algebra, Computational Physics, Statistics, Applied Mathematics and Data Structures.

University of Petroleum and Energy Studies, Bachelor of Science in Aerospace Engineering — 2018
Minor in Math and Physics — India

EXPERIENCE

Graduate Research Assistant — September 2021 - present
UMass Dartmouth — *MA, USA*

The project involved developing a new algorithm for analyzing white dwarf merger processes, focusing on reliability and stability improvements. Leveraging data science techniques, the objective was to overcome limitations and refactor the previous algorithms, enhance the accuracy of predictions, and provide critical insights into astrophysical phenomena.

- Challenged with deciphering complex astrophysical phenomena, I developed and implemented algorithms for time-series analysis using Python and Java. Optimized large-scale simulations and analyzed large datasets, leading to more accurate predictions and critical research insights such as predictions for a new class of astrophysical objects.
- Faced with slow software release cycles, I streamlined code review, testing, and documentation processes by employing best practices such as Test-Driven Development (TDD) and code reviews. I also used automation tools like Git for version control and automated testing frameworks like PyTest. This approach significantly enhanced software performance, accelerated release cycles, and improved the user experience for the team.
- Identified inefficiencies in software management processes, I leveraged the Linux command line to integrate and qualify software components, and automate routine tasks. This action significantly improved operational efficiency and fostered seamless collaboration across the team.

Quantitative Research Intern — August 2018 - September 2019
Instruments Research and Development Establishment — *Dehradun, India*

The project focused on reducing noise in sensor data from various adaptive optics systems by leveraging Gaussian processes and Bayesian inference techniques. This approach enabled more accurate real-time analysis of complex datasets, ultimately enhancing the performance of the adaptive optics systems.

- Designed and implemented a high-performance data processing pipeline using Java and MATLAB to facilitate real-time analysis of complex datasets in a multidisciplinary research environment.
- Collaborated with cross-functional teams to develop innovative solutions for data modeling, API integration, and predictive analysis, enhancing overall research productivity.

TECHNICAL PROJECTS

EnergyDash — November 2022 - January 2023

Developed a detailed electricity usage analysis code (available here) in Python using Tensorflow and Pandas to track usage in hourly intervals and identify consumption patterns. It also suggests usage optimization strategies and includes monitoring of solar panel energy production.

Time-Series Supernovae Classifier — December 2021 - August 2022

Utilized machine learning and numerical computing techniques in Python to successfully classify supernovae by reading FITS file data, extracting features and labels, and training and testing the classifier. This involved applying analytical skills to do system-level design and reliability testing.

Personal Website Design and Development June 2022 - May 2023

Created a comprehensive portfolio website (available here) to showcase personal projects and skills. Implemented using HTML, CSS, and JavaScript with emphasis on responsive design for optimal display across devices. Incorporated an interactive blog section to share insights and updates on my latest projects. Utilized Git for version control during development.

SKILLS

Technical Skills	Python, Java, SQL, Fortran, HTML, CSS, JavaScript
Frameworks	Numpy, Pandas, Tensorflow, Matplotlib, Scikit-learn, PyTest
Software & Tools	Git, Linux, MATLAB, MPI

EXTRA-CURRICULAR ACTIVITIES

- Member of Society of Physics Students, Presenter, Hiker, Badminton player