Rishabh Solanki

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https://rishabh01solanki.github.io

Diligent problem solver with resourceful approach to challenges. Leverages Computational Physics expertise to manage ambiguous data with focus on results.

Skills

Independent and collaborative research. Handling complex data. Machine learning. Predictive modeling. Written and verbal technical communication.

Python(expert), Java(expert), Fortran(proficient) C(fluent)

Tableau, Git, Linux, High Performance Computing

Experience

UMass Dartmouth / Graduate Researcher
SEP 2021 - PRESENT, USA

Developed, designed and implemented modules for a novel approximate Riemann solver which is significantly robust and faster than the current solvers.

- Maximized the capabilities of algorithms used in analysis of shock waves in plasma which led to a more resolved and consistent shock capture .
- Rearchitected, refactored and documented microphysics modules, enhancing and extending core capabilities and enabling new kinds of stellar models

Classifying Supernovae using Deep Neural Network, *May 2022 - ongoing*

- Developed and trained a Convolutional Neural Network on supernova spectra data from Berkeley SN Ia Program.
- Reduced the supernova classification time from hours (template matching methods) to seconds without compromising on accuracy.
- Implemented segmentation methods that allow for better feature recognition.

Instruments Research and Development Establishment / Intern
AUG 2018 - SEP 2019, INDIA

- Co-developed end-to-end process/pipeline spanning data collection, harmonization, and visualization using Java and Matlab. The undertaking also required creating a mechanism to compare the adaptive optics system . Resolution rates were visualized on a day-to-day basis using Tableau. Additionally, provided tracking ability for each entity to the stakeholders.

University of Petroleum and Energy Studies / Undergraduate Researcher
SEP 2017 - AUG 2018, INDIA

Developed orbital analysis and collision detection program using machine learning.

- Improved runtime by 20% by implementing error-based step size control and optimizing the step size in RK4 interpolation scheme.
- Created a machine learning algorithm that trained itself in real-time on data produced by the orbital analysis module which led to a ML based collision avoidance system

Education

University of Massachusetts Dartmouth / MS Physics
SEP 2021 - MAY 2023, USA

- Designed, managed, and taught recitation and laboratory classes consisting of 100+ students in the undergraduate series, Physics for Science and Engineering.

University of Petroleum and Energy Studies / BS Aerospace Engineering
SEP 2018 - MAY 2018, INDIA