Rishabh Solanki

New Bedford, MA -- rsolanki@umassd.edu -- 508-717-5407
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), Html(fluent)

—

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.

- Reduced the spread of contact discontinuity by almost 70% by implementing a novel steepening algorithm based on Piecewise Parabolic Method (PPM) which led to more resolved and sharper discontinuities.
- Rearchitected, redesigned 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.

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

Developed orbital analysis and collision detection program using machine learning.

- Reduced 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

Instruments Research and Development Establishment / Intern
MAY 2017 - SEP 2017, INDIA

- Increased the performance of adaptive optics systems. Collaborated with a team of 10 from IRDE, wrote and documented code to obtain centroidal shift which led to refined modeling of refractive index parameter and improved the angular resolution from 3 arc-sec to 10 milliarc-sec.

—

Education

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

- Designed, managed, and taught recitation and laboratory classes consisting of 50+ students in the undergraduate series, Physics for Science and Engineering.

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