Mohana Sai Suman Ravi

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Undergraduate physics student with hands-on computational and statistical research experience. Skilled in R Shiny, Python, and data modeling, with a strong foundation in mathematics and physics. Eager to contribute to astrophysics research through innovative problem-solving and collaboration

Professional Experience

App Designer
IDSWG, Plainsboro, NJ — *June 2025 - August 2025*

- Developed a Bayesian Basket Trial Design web application in R Shiny to simulate, analyze, and visualize clinical trial dataDesigned and developed interactive web applications using R Shiny for data visualization and analysis purposes
- Designed interactive modules (Trial Design, Simulation, and Analysis) to enable users to perform Bayesian inference and basket trial evaluation.
- Applied statistical modeling and computational simulation techniques to support decision-making in drug testing contexts.
- Collaborated with mentors to translate research requirements into effective, user-friendly applications.

Personal Projects

Arduino Temperature Hub

- Built a multi-sensor hub using Arduino, DHT11 temperature sensor, and LCD display for real-time monitoring
- Enhanced functionality by integrating an MQ135 gas sensor and DS3231 RTC clock module to display air quality and time
- Added an IR receiver + remote control to switch between different data screens, improving user interactivity

Ultrasonic Motion Detector

- Designed and implemented a motion detection system using an HC-SR04 ultrasonic distance sensor with Arduino
- Programmed logic to trigger a buzzer alarm when an object or person entered a predefined proximity range
- Demonstrated applications in security (intrusion alarm) and home automation (motion-triggered devices) by programming the

Key Skills

- Arduino and Raspberry Pi prototyping
- Circuit analysis and electronic system design
- Strong conceptual understanding of Quantum Mechanics, Classical Mechanics, and Astrophysics
- Calculus, Linear Algebra, and Differential Equations
- Programming Languages: Python, R, C, Matlab, HTML, Latex - Data Visualization
- Statistical Modeling
- Public performance & presentation skills
- Problem-solving and analytical reasoning
- Team collaboration and project-based teamwork
- Carnatic Music

Arduino to process ultrasonic sensor data and activate a buzzer when proximity thresholds were crossed

Volunteering

Shelfer at Plainsboro Public Library June 2019 - October 2022

9 Van Doren St, Plainsboro Township, NJ 08536

- Assisted with shelving, organizing, and circulation support to maintain efficient library operations
- Helped staff with community events and seasonal book sales
- Strengthened organizational skills, attention to detail, and reliability through consistent service

HATCC Volunteer at Krishna Youth Volunteering Group November 2020 - November 2021

31 Wooleytown Rd, Morganville, NJ 07751

- Created handmade jewelry boxes and bracelets for children in hospitals
- Supported efforts to provide comfort and encouragement to pediatric patients
- Developed patience, creativity, and consistency through volunteer service

Clubs

Robotics Club September 2019 - August 2021

WWP High School North

- Assisted with electrical wiring and circuit troubleshooting for robotics builds
- Gained hands-on experience working with sensors, wiring, and power systems under mentor guidance
- Learned fundamentals of circuits, wiring, and teamwork in a technical project setting

Education

BS in Physics September 2023 - June 2025

Rutgers University New Brunswick

Relevant Coursework: Classical Mechanics, Electromagnetism, Quantum Physics, Thermodynamics, Differential Equations, Probability & Statistics

High School Diploma September 2019 - June 2023

West Windsor Plainsboro High School North

Relevant Coursework: Advanced Physics, Advanced Mathematics; participated in science fairs and STEM-related activities