Akhil Reddy

Curriculum Vitae

http://akhilvreddy.github.io

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Statement of Purpose

Undergraduate studying Computer Engineering & Professional Physics with interests in computational physics and software engineering. Holds experience in various types of research and coding projects. Has a proven ability to meet deadlines, prioritize, problem solve and maintain high standards. Currently seeking more research labs or other opportunities that will provide exposure to career progression.

Research Interests

Signals & Signal Processing, Noise reduction, High Energy Physics, Algorithms & Complexity Theory

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Education

Rutgers University, *Bachelor's of Science*   Sept 2020 - May 2024
Major: Professional Physics & Computer Engineering
Minor: Math
GPA: 3.82
Relevant Coursework: Classical Mechanics 1-2, Classical Electromagnetism 1-2, Modern Physics, Thermal Physics, Partial Differential Equations, Linear Algebra, Digital Logic Design, Circuits 1-2, Network Security, Probability & Random Processes, Mathematical Reasoning, Honors Calculus III-IV, Software Engineering, Computer Architecture

South Brunswick High School, *High School Diploma*   Sept 2016 - June 2020
Relevant Coursework: Calculus I-II, AP Physics C, AP Chemistry, AP Computer Science, Android Development
GPA: 4.27 (Weighted) 3.79 (Unweighted)
Activities: Science Olympiad, Computer Science Club, Junior Varsity Track & Field

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Research Experience

Rutgers ECE & Biochemistry, *Prof. Debashish Bhattacharya & Mehdi Javanmard*   Dec 2021 - Present
Application Developer
In this lab I worked with coral reefs and had to analyze their health by designing an android application. Analysis of their health is done by image processing, mainly by border detection. I had to code an algorithm for border detection tailored toward coral reefs so that the average RGB value of a specific coral can be calculated. Worked with YOLOV4 which is a one-stage object detection model that uses AI to detect if the object in sight of the camera is what we are currently looking for. Had to regather the data after the experiment and sort it into an excel file for the members of the Biochemistry department to understand. In May, the Principal Investigator will be traveling to Hawaii to test the health of huge batches of coral by using the application that I designed.

Chandrashekar Star Modeling, Advisor - *Parker Hund*   Aug 2021 - Dec 2021
Research Assistant
Analyzed star temperature data to fit them to known differential equations. We reworked the equations to decide if the results we got worked with the hypothesized equations. Used C and Python to write code that determines correlation between Y. Eriguchi's paper to the initial star equations proposed by Chandrashekar in 1939.

Directed Reading in Mathematics, Advisor - *Nicholas Backes*   May 2021 - Aug 2021
Research Assistant
Conceptualized the interaction between the real number space and p-adic spaces to apply the qualities of p-adic numbers to simplify logic and other arithmetic calculations. Looked into ways in which p-adic computations can possibly be incorporated into computer algorithms to speed up computations. Culminated in a presentation event where I presented my findings to other undergraduate students in the program and the corresponding graduate student mentors.

Skills

Programming Languages C, C++, C#, Java, Python, Mathematica, Matlab, Verilog, HTML/CSS, LATEX
Frameworks Numpy, Android SDK
Hardware Digital Logic Design, DC Circuitry, LTSpice, Multimeter Analysis

Leadership Positions & Organizations

Rutgers Society of Physics Students (SPS)

Outreach Coordinator   Sep 2021 - Present
Being the Outreach Coordinator, I was responsible for spreading awareness of our club across campus and to local high schools and middle schools. This year, we had a few events on campus where we collaborated with other organizations to increase turnout. We also had one big talk given in Piscataway High School to students involved in STEM to exhibit Rutgers University's Physics department and to promote interest in physics. We also have an upcoming demonstration at a local New Brunswick elementary School.

General Member   Sep 2020 - May 2021

Rutgers Blueprint

User Interface/User Experience Cohort Member   Jan 2022 - April 2022
Worked in a team of 3-4 group members on designing the graphics for an app. Used figma to build the framework of the app and made pseudo code for the backend. Presented our work to other members in the community.

Rutgers Astronomical Society (RAS)

General Member   Sep 2021 - Present

First Year Integration

Upperclassman Leader   Aug 2021 - Present
Mentored 4 first year students to assist with the transition between high school to college by helping them understand effective studying techniques to be able to adjust to the rigor of college classes. I also planned events such as movie and paint nights to promote student involvement. Also had to have one-on-one meetings with the students to help them study.

First Year Fellowship   Jan 2021 - May 2021

Selected Participant
Strengthened public speaking, improved collaboration skills, and developed communication skills by working on a semester long capstone project where we had to pick a specific societal issue and show that we are making an impact on the issue. Ran a digital activism project where a few of my other classmates and I used Instagram and other social media to spread awareness and debunk myths about the coronavirus vaccine.

Work Experience

Freelance Tutor   Sep 2018 - May 2021
Tutored more than 20 high school and undergraduate students in various subjects. Helped all sorts of students, including students with special needs. Mainly tutored Calculus 1 & 2 and basic calculus based physics.

FedEx Ground   June 2020 - August 2020

Package Handler
Oversaw an entire wing of packages by making sure the equipment functioned as needed and had correct tracking labels. Ensured that the packages in my wing were sent to the correct truck and eventually reached the correct destination.

Subway North Brunswick   June 2019 - August 2019

Store Manager
Independently managed the store from opening time to rush hour by running inventory, being a cashier, and managing the food line. Ensured smooth communication between the warehouse director and the store to confirm supplies were delivered timely.

Givology Nonprofit   June 2018 - August 2018
Intern
Covered the main newsletter for this nonprofit organization which aimed to help give children in developing countries better education. Newsletter helped with outreach and gave the employees of the firm a weekly catchup for different teams.

Personal Projects
NBA Neural Network   May - June 2022
Quantum Wave Function Analysis   May 2022
Fast Fourier Transform
Laplace's Equation in the Real World
Weather App

Honors & Awards
Eta Kappa Nu Honor Society (HKN)   April 2022 - Present
Society Member
Selected to be in Eta Kappa Nu, an electrical engineering honor society, based on excellence in Electrical & Computer Engineering. Induction is given to rising juniors who are at the top sixth of their class and rising seniors who are at the top fourth of their class.

Dean's List   Fall 2020 - Present
Rutgers University School of Engineering
Was nominated to the Dean's list for all the semesters I was at Rutgers University.