Kenneth R. Roffo Jr.

Contact: kroffojr@gmail.com
Website: kennyroffo.com
GitHub: https://github.com/kroffo
LinkedIn: https://linkedin.com/in/kennyroffo

Education

B.S., Physics, Mathematics, Computer Science, Honors Program, Magna Cum Laude — May 2017
SUNY Oswego - GPA 3.66

New York State Advanced Regents Diploma with Honors — 2012
John C. Birdlebough High School - GPA 91/100

Professional Experience

Software Engineer - Fermata Discovery Inc. — February 2023 - Present
At this early stage startup I provided my expertise and insight into software development best practices and design principles. I helped the team to understand the importance of thorough testing, high quality code contributions, and constructive code reviews. The backend system was written in Python and deployed through AWS. Neo4J was used for the database, with GraphQL to communicate with the frontend.

Backend Software Engineer - Percent Technologies — April 2022 - November 2022
Percent's system was comprised of a set of Java-based microservices with PostgreSQL for the database. I worked primarily in the Esign area of the system, which included modeling investor profiles in SQL tables, preparing profile form schemas for the frontend and saving their data to the database on submission, and filling PDF documents programatically. We used Kubernetes and AWS for deployments, and Lens and DBeaver to monitor the system.

Software Engineer - NASA Jet Propulsion Laboratory — June 2017 - April 2022
My first role at JPL was to develop tools for InSight, a Mars Lander. I joined the team in June 2017 to build modeling software for surface operations. I witnessed the launch from Vandenberg on May 5, 2018, and was in the surface operations room for landing on November 26, 2018. I worked with my team to determine what the lander would do each day on Mars, using the tools I developed over the year and a half before landing. After working on InSight, I worked on several projects including Flight Software for the FSWCore project, early-staged mission modeling and simulation of the Europa Lander mission (publication in progress), and the development of a multimission suite of tools for developing, simulating and packaging mission plans. This open-sourced effort is pushing forward our capabilities for operating our space craft, bringing our technology in this area into the modern era. See here for an article about my role on InSight.

Internships

See this interview about my internships and tutoring SUNY Oswego.

Software Engineer - NASA Jet Propulsion Laboratory
The Deep Space Network consists of multiple antennae on Earth which communicate with space craft beyond the moon. In order to improve this process, NASA software engineers are developing a new software to generate files read by the antennae, however they must check that the new software does not generate files with errors. My project at JPL was to develop a diff tool using node.js which would compare these files, and display differences, which the users could flag as unimportant differences, or

more imporantly find defects in the products of their software.
Mentor: **Mark Johnston** Summer 2015

Research Experience

An Asteroseismic Analysis of the Red Giant Branch Bump
As an intern in SAGE at Max-Planck Institute for Solar System Research in Göttingen, Germany I studied how asterosesmic parameters were effected during the RGB bump. I used the MESA stellar evolution code to generate tracks of models of stars with varying masses, then used ADIPLS to calculate the frequencies they would output as the stars passed through the bump.
Advisors: **Saskia Hekker, Earl Bellinger, George Angelou** Summer 2016

The Application of Abstract Algebra to Twisty Puzzles
Rubik's Cubes have fascinated mathematicians ever since they made their debut in the 1970s. Since then, many differently shaped and sized variants of the Rubik's Cube (called twisty puzzles) have become available. In this research I applied concepts I learned in Abstract Algebra to describe these fascinating puzzles. I also worked on a design for a puzzle which I have created, and 3D-printed thanks to SUNY Oswego's SCAC grant.
Advisors: **Bonita Graham, David Vampola** 2014 - 2016

Fourier Decomposition Analysis of CSTAR RR Lyrae Variable Stars
I began this research through a 6 week visit to India in summer 2014. My original, and now completed, goal was to determine the metallicities of several RR Lyrae variable stars.
Advisor: **Shashi Kanbur** 2014 - 2015

Teaching

Math Club Tutoring 2015 - 2016
Organized and participated in free Math Club tutoring sessions for Calculus students.

Math and Sciences Tutor at SUNY Oswego 2014 - 2017
Courses Tutored: Calculus 1, 2 and 3, Discrete Math, Physics 1 and 2, CS intro level

HON 150 Seminar Leader at SUNY Oswego Fall 2014
Prepared and presented weekly lectures for an introduction-to-college course. Created and Graded weekly writing assignments.

Talks

InSight: The Next Mars Lander.
SUNY Oswego 2018

A New Cube.
MAA Seaway Section Meeting, SUNY Geneseeo 2016

The Invention of a Cube.
Quest, SUNY Oswego 2016

A Necessary Set of Turns to Solve a Rubik's Cube.
MAA Seaway Section Meeting, Colgate University 2015

The Necessity and Sufficiency of 5 Face Turns to Solve a Rubik's Cube.
Quest, SUNY Oswego 2015

RR Lyrae Metallicities from CSTAR data.
Quest, SUNY Oswego 2015

Fourier Analysis of CSTAR RR Lyrae Variable Stars.
Rochestor Symposium for Physics Students, SUNY Oswego 2015

Metallicity determination for RR Lyraes observed from CSTAR telescopes in Antarctica.
SUNY Undergraduate Research Conference, SUNY Brockport 2015

The Line Trick to Multiplying Numbers and Polynomials.
Math Club, SUNY Oswego 2015

Honors & Awards

Europa Lander Team Award April 1, 2022
Kenny is awarded Europa Lander's 2022 Team Award for esign Sim support and successful execution.

NASA Honors Award September 28, 2020
To the InSight Mission Planning and Sequencing Team for developing maintaining and operating a robust Planning and Sequencing System in support of deployment HP3 recovery and science monitoring operations.

NASA Group Achievement Award August 28, 2019
To the InSight Surface Activity Planning Development Team for design and implementation of the new Science Plan Integrator tool suite enabling tactical surface operations.

Successful completion of the Link Complexity and Maintenance Tool - NASA JPL June 13, 2018

Development and Delivery of the Link Complexity Scheduling Tool - NASA JPL Sept. 22, 2018

Honors Program - SUNY Oswego 2012 - 2017

Presidential Scholarship for Academic Achievement - SUNY Oswego 2012 - 2016

Sigma Xi Award for Excellence in Research Presentation - SUNY Oswego Spring 2015

Dean's List - SUNY Oswego Fall 2014 - Spring 2015

President's List - SUNY Oswego Fall 2012 - Fall 2013, Spring 2016

Youth of the Year - John C. Birdlebough High School 2012

Presidential Community Service Award - Corporation for National and Community Service 2012

Senior Key in Mathematics - John C. Birdlebough High School 2012

Eagle Scout - Boy Scouts of America 2011

Membership

Omicron Delta Kappa National Leadership Honor Society	Inducted 2015
Phi Kappa Phi National Honor Society	Inducted 2014
National Honor Society	Inducted 2010
Tri-M Music National Honor Society	Inducted 2010
John C. Birdlebough HS Student Council - *President*	2010 - 2012
Boy Scouts of America *Quartermaster, Assistant Senior Patrol Leader, Eagle Scout, Unit Commissioner*	1999 - 2020

Skills

Mac and Linux Proficient

Proficient in Java, Python, C/C++, PostgreSQL, Bash, Javascript, HTML/CSS, LaTeX

Intermediate Metal Guitarist

Rubik's Cube Speed Solver

Last updated: April 14, 2023