

Kenneth R. Roffo Jr.

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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 - NASA Jet Propulsion Laboratory June 2017 - Present

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. Since working on InSight I have been contributing to the development of a multimission suite of tools for developing, simulating and packaging mission plans. This 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 importantly 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 asteroseismic 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**

June 2016 - Present

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**

Fall 2014 - Fall 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**

Summer 2014 - Spring 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.

Rochester 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

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 - <i>President</i>	2010-2012
Boy Scouts of America <i>Quartermaster, Assistant Senior Patrol Leader, Eagle Scout, Unit Commissioner</i>	1999-Present

Skills

Mac and Linux Proficient

Proficient in Java, Python, C/C++, Javascript, HTML/CSS, Bash, L^AT_EX

Intermediate Metal Guitarist

Rubik's Cube Speed Solver

Last updated: April 15, 2021