Curriculum Vitae

Contact Info.

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Education

University of California: Los Angeles 2019
Degree: B.S. Mathematics of Computation
Minor: Geophysics and Planetary Physics
College of the Canyons 2016
Degrees: Associates in Mathematics
Associates in Physics

Awards

NASA Space Grant Undergraduate Fellowship
Lab Assistant June 2019 - August 2019
Description: Support facility and logistical needs for Psyche Mission, Europa Mission, and IMAP mission.
- Followed ESD protocols when in space lab
- Kit parts for missions

Skills

Applied Maths: Mathematical Modeling, Numerical Methods, Optimization, Algorithms
Other: Tutoring, Project Management, Staff Management, Public Speaking, Lab experience, Documentation Writing

Professional Orgs.

Triangle Fraternity for Engineers, Architects, and Scientists
Hermanos Unidos
Mathematics, Engineering, Science, Achievement (MESA)

Technical Skills

Tools: Emacs, VIM, Jupyter, terminal
Advanced Knowledge: Python, Fortran, LaTeX
Working Knowledge: C/C++, Julia, Microsoft Office
Basic Knowledge: Java, Assembly, Bash
Cloud-Based Technologies: AWS, Docker
Other: Soldering, Milling, Machining, Circuitry, ESD Safety

Work Experience

Simulated Planetary Interiors (SPIN) Lab March 2019 - Present
Title: Research Assistant
- assists with debugging software
- creates new documentation to streamline software use
- assisting with translating coding classes from Matlab code to Python

Institute of Transportation June 2018 - Present
Title: IT Assistant
- assisted in building computers for the ITS department along with setting up connections and machines for the Lewis Center
- Help maintain the web servers under the ITS department and fix any bugs that may arise

Atmospheric and Oceanic Department October 2019 - January 2020
Title: Student II Coding Assistant
- assisting Professor Jasper Kok with translating his course from Matlab to Python
  - re-coding homework assignments
  - designing scripts for lecture
  - providing any outside resources on coding in Python

College of the Canyons September 2014 - June 2019
Title: MESA Tutor/ Workshop Facilitator/ Math and Science Tutor
- Assisted students in STEM homework and answered questions they had
- Lead Academic Excellence Workshops in the MESA Center
- Physics Academic Workshop showed a GPA increase of 0.2 with my students and an average of 1 letter grade increase over other students

ClassCalc June 2018 - September 2018
Title: Software Intern
- created an algorithm that optimized the accuracy of the calculator from an error of .01 to .00001
- cleaned up code and provided documentation on software that had none

Gentle Ride Ambulance May 2014 - December 2014
Title: EMT-B
- Patient care such as vitals, assessments, medical interventions
- Giving and taking medical history reports

Papa John's Pizza May 2013 - April 2014
Title: Assistant Manager
- Took orders and ran register in the store
- Surveyed systems at other businesses
- Closing the restaurant and stock counting

High Pressure Technologies LLC May 2011 - July 2011
Title: Machine Shop Intern
- Assisted machinist with pressure system repair
- Surveyed systems at other businesses
- machined fittings for pressure systems
- Learned machining and workshop environment

Project Experience

Rapid: Blue Dawn CubeSat Mission – http://bruinspace.com/projects/rapid.html
Title: Assembly, Integration, & Testing Engineer June 2018 - April 2019
Project: Team developed a payload that consisted of a magneto-hydrodynamic pump that launched on Blue Origin's New Shepard rocket
Skills Used: Python, Arduino, Documentation Writing, Circuitry, Soldering

- Write assembly, safe-to-mate, and functional procedures
- Test procedures for errors and accuracy on design
- Test magneto-hydrodynamic pump extensively to ensure design was safe to fly

DataFest 2019 – https://github.com/DJ-2805/dataFest2019
Title: Data Analyst May 2019
Project: Team developed a physical model to calculate when a rugby player experienced a tackle during a given game, and compared if it had an affect on players reporting scores
Skills Used: Python, Data Analysis, Documentation Writing, Math Modeling

- designed physics model to have thresholds for impulse and speed
- pulled outside resources from papers describing stats of players
- checked accuracy of model
- created presentation for judges to see results

Idea Hacks 2019 – https://github.com/DJ-2805/muscleBot
Title: Data Analyst January 2019
Project: Team designed a RC Car that moved based off of hand motion and muscle detection
Skills Used: Python, Arduino, Circuitry, Data Analysis

- Calibrated muscle sensor to recognize EM pulses to turn on/off RC Car
- Calibrated hand motion, so that acceleration data would move the car in correct motion
- Assisted in circuit design of RC Car and hookup of hardware to devices

DataFest 2018 – https://github.com/DJ-2805/datafest2018
Title: Data Analyst May 2018
Project: Team developed a machine learning algorithm to determine possible indicators of competitive job postings on indeed.com
Skills Used: Python, Data Analysis, Documentation Writing

- Extracted data, so that team can work with smaller sets
- Analyzed data via matrices to confirm machine algorithm was accurate
- Created presentation to present results to audience and judges

LA Hacks 2018 – https://github.com/ryanmjacobs/4sk8
Title: Full Stack Developer March 2018
Project: Team developed an Arduino compass hooked up to a skateboard that would receive heading from external website
Skills Used: JavaScript, Arduino, Circuitry

- Designed back end of the website using JavaScript, so that Arduino received GPS coordinates
- Designed simple front-end for the website using HTML, so that user could input destination
- Assisted team members with design, so that it would gather data, and output an accurate heading

DataFest 2017
Title: Data Analyst May 2017
Project: Team developed a machine learning algorithm to determine purchase pattern of families traveling
Skills Used: Python, Data Analysis, Machine Learning

- Extracted data, so that team can work with smaller sets
- Analyzed data via matrices to confirm machine algorithm was accurate
- Created presentation to present results to audience and judges

NASA High Altitude Student Platform: Electrostatic Cosmic Dust Collector [ECDC]
Title: Systems Engineer Fall 2016 - Fall 2017
Project: Team optimized the device for HASP to collect particles from celestial showers.
Skills Used: Project Management, Staff Management, Public Speaking

- Researched corona discharge to optimize the electrostatic dust collection

NASA High Altitude Student Platform: Electrostatic Cosmic Dust Collector [ECDC]
Title: Systems Engineer Fall 2015 - Fall 2016
Project: Team developed a device for HASP to collect particles from celestial showers.
Skills Used: C/C++, Public Speaking, Project Management, Soldering, Machining, Milling

- Modelled systems and possible scenarios the ECDC will go through during flight, so that the team would know design requirements

College of the Canyons Science Fair: Sonoluminescence
Title: Researcher and Analyst Fall 2013 - Spring 2014
Project: Team constructed an apparatus to display the sonoluminescence phenomena.
Skills Used: Soldering, Circuitry, Oscilloscope, Lab Testing

- Researched sonoluminescence
- Constructed the apparatus by soldering a circuit together

Research Experience

Rapid: Blue Dawn Post Launch Analysis
Advisor: Lydia Adair, Emily Hawkins — April 2019 - Present
Project: Analyze the magnetohydrodynamic design of Blue Dawn, and show that it is a sensible design
Skills Used: Python, Debugging, Documentation Writing, Soldering, Circuitry, Arduino, Lab testing

- Setup Arduino circuit to run pump and read values from flow meter
- Use Python interface to display values on screen to users to observe
- Repeat experiment efficiently to ensure results are consistent

Mineral Lab: APEx
Advisor: Abby Kavner — October 2019 - Present
Project: Extracts peak locations and ancillary information from an unrolled diffraction image.
Skills Used: Python, Debugging, Documentation Writing

- Switching Python 2.0 standard to Python 3.0 standard
- Allowing for more cases of images to be inputted and analyzed

SPIN Lab: DigiPyRo – github.com/DJ-2805/DigiPyRo
Advisor: Jon Aurnou — July 2019 - Present
Project: Digitally rotates a movie and allows for single-particle tracking. Originally designed to intuitively show Coriolis force effects by the appearance of inertial circles when digitally rotating film of a ball oscillating on a parabolic surface.
Skills Used: Python, Debugging, Documentation Writing

- Switching Python 2.0 standard to Python 3.0 standard
- Debugging OpenCV package implemented in design

EPSS 199: Directed Research
Advisor: Lars Stixrude — June 2019 - August 2019
Project: Created a model that simulated a silicate planet's mass and radius with a initial parameters and equations
Skills Used: Python, Fortran, Debugging, Documentation Writing

- Coded model in Fortran following modular design
- Used Python to visualize simulated points
- Collected observed data from NASA Exoplanet Database to compare

URBN PL 199: Directed Research – github.com/ucla-its/network-commute-distance
Advisor: Evelyn Blumenberg — June 2019 - August 2019
Project: Compare the euclidean distance to the network distance of ordered pairs of 14 million home and work FIPS code destinations
Skills Used: Python, Debugging, docker, jupyter, Documentation Writing

- Used a docker container to run OSRM software to create a local map of California on the machine
- Paralleled Python code such that it can run the OD pairs efficiently
- Used public Census data to gather latitudes and longitudes for FIPS codes
- Showed that the Euclidean distance differs on a median of about 3 miles

Leadership Experience

Triangle Fraternity
House Manager — June 2019 - June 2020

- Coordinated tenants and assigned them living spaces
- Maintained house through repairs
- Called technicians to fix invasive damages
- Tracked a budget of $24,000 to use for the house

Learning Assistant Program: EPSS 71 - Intro to Computing for Geoscience
Learning Assistant — Sept 2019 - Dec 2019

- assisted students with their problems by redirecting the questions and checked for understanding
- urged students to work collaboratively to check code
- created worksheets, so students had more practice with code
- showed students skills in debugging problems themselves when instructors weren't around to help
- brought up concerns students had to TA and instructor

UCLA CalGeo
Community Service Chair — Fall 2017 - Spring 2018

- Planned community service events
- Planned public outreach events

Astronomy and Physics Club
President — Fall 2015 - Spring 2016

- Started and manged club events
- Wrote budget proposals

Volunteer Experience

Northridge Hospital ER

ER Volunteer Fall 2014 - Summer 2016

- Stocked medical carts with necessary items for nurses
- assisted patients in simple requests of food or calling
- assisted nurses in patient care as directed

Community Outreach

UCLA: Exploring Your Universe

Booth Volunteer Fall 2017 - Fall 2018

Description: An annual event hosted by UCLA that had science booths illustrating all types of phenomena

- assisted in setting up booths and running information
- ran science demo for particular group I was associated with that year

College of the Canyons: Star Party

Booth Volunteer Fall 2013 - June 2017

Description: COC hosted a semester event that had science booths and telescopes set up for families to come and walk around. There would also be a couple guest speakers to present on particular science topics

- assisted in setting up tables and telescopes for workers
- ran science demos and explained phenomena to families
- assisted families around the event