

Curriculum Vitae

Contact Info.	Name: David Abraham James Cell: (661) 666-2009 Email: davidabraham@ucla.edu LinkedIn: linkedin.com/in/daj-2805/ Github: github.com/DJ-2805	Education	University of California: Los Angeles 2019 <i>Degree:</i> B.S. Mathematics of Computation <i>Minor</i> Geophysics and Planetary Physics College of the Canyons 2016 <i>Degrees:</i> Associates in Mathematics Associates in Physics
Awards	NASA Space Grant Undergraduate Fellowship <i>Lab Assistant</i> June 2019 - August 2019 <i>Description:</i> Support facility and logistical needs for Psyche Mission, Europa Mission, and IMAP mission. <ul style="list-style-type: none"> Followed ESD protocols when in space lab Kit parts for missions 		
Skills Technical Skills	<i>Applied Maths:</i> Mathematical Modeling, Numerical Methods, Optimization, Algorithms <i>Other:</i> Tutoring, Project Management, Staff Management, Public Speaking, Lab experience, Documentation Writing <i>Tools:</i> Emacs, VIM, Jupyter, terminal <i>Advanced Knowledge:</i> Python, Fortran, \LaTeX <i>Working Knowledge:</i> Matlab, Simulink, C/C++, Julia, Arduino, Microsoft Office <i>Basic Knowledge:</i> Java, Assembly, Bash <i>Cloud-Based Technologies:</i> AWS, Docker <i>Other:</i> Soldering, Milling, Machining, Circuitry, ESD Safety	Professional Orgs.	Triangle Fraternity for Engineers, Architects, and Scientists Hermanos Unidos Mathematics, Engineering, Science, Achievement (MESA)
Work Experience	Simulated Planetary Interiors (SPIN) Lab March 2019 - Present <i>Title:</i> Research Assistant <ul style="list-style-type: none"> 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 <i>Title:</i> IT Assistant <ul style="list-style-type: none"> 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 - March 2020 <i>Title:</i> Student II Coding Assistant <ul style="list-style-type: none"> assisting Professor Jasper Kok with translating his course from Matlab to Python <ul style="list-style-type: none"> re-coding homework assignments designing scripts for lecture providing any outside resources on coding in Python College of the Canyons September 2014 - June 2019 <i>Title:</i> MESA Tutor/ Workshop Facilitator/ Math and Science Tutor <ul style="list-style-type: none"> 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 <i>Title:</i> Software Intern <ul style="list-style-type: none"> 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 - Decemeber 2014 <i>Title:</i> EMT-B <ul style="list-style-type: none"> Patient care such as vitals, assessments, medical interventions Giving and taking medical history reports Papa John's Pizza May 2013 - April 2014 <i>Title:</i> Assistant Manager <ul style="list-style-type: none"> 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 <i>Title:</i> Machine Shop Intern <ul style="list-style-type: none"> Assisted machinist with pressure system repair Surveyed systems at other businesses machiend 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

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

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

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 - January 2019

- 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

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 2018

- Started and manged club events
- Wrote budget proposals

Volunteer Experience	Northridge Hospital ER	
	<i>ER Volunteer</i>	Fall 2014 - June 2016
	<ul style="list-style-type: none"> • 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	
	<i>Booth Volunteer</i>	Fall 2017 - Fall 2018
	<i>Description:</i> An annual event hosted by UCLA that had science booths illustrating all types of phenomena <ul style="list-style-type: none"> • 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	
	<i>Booth Volunteer</i>	Fall 2013 - June 2017
	<i>Description:</i> 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 <ul style="list-style-type: none"> • assisted in setting up tables and telescopes for workers • ran science demos and explained phenomena to families • assisted families around the event 	