david abramov

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Education

M.S./Ph.D. Computational Media / *University of California Santa Cruz, Baskin School Of Engineering* / Fall 2018 - Present
B.S. Physics / *DePaul University, College of Science & Health* / September 2013 - June 2017
B.S. Biology / *DePaul University, College of Science & Health* / September 2013 - June 2017

Work History

Lead Developer and Designer for CosmoVis, Creative Coding Lab, UCSC | Santa Cruz, CA | *August 2019 - Present*

- Collaborated with an astrophysics postdoc to build a scalable, interactive volume rendering web application for visualizing large cosmological simulation datasets (1-500 GB) on galactic and intergalactic scales, enabling computational annotations.
- Hosted as a Flask application stored using AWS S3 and hosted on an AWS EC2 instance. Flask runs astronomy-based Python code that enables on-demand server-side generation of synthetic spectra when using the front-end HTML/CSS/JS interface.
- Visualization was developed using the THREE.js library, using custom direct volumetric rendering shaders.
- To be submitted as a full paper to the 2021 EuroVis conference held in Switzerland, with the deadline in December 2020.

Data Visualization Computer Science Intern, Jet Propulsion Laboratory and Caltech | Pasadena, CA | *Summer 2019*

- Worked as a Computer Science Lead with a research group at JPL to help visualize results from simulations of a spacecraft concept that would collect gas from the upper atmosphere of Venus while traveling at hypervelocity.
- Cleaned and processed large datasets into a more manageable format for visualization.
- Developed a prototype web application through an iterative design process consisting of domain expert interviews in order to understand the science team's needs, along with weekly critique sessions from design and UX experts.

Teaching Assistant, Intro to Computer Graphics, UCSC | Santa Cruz, CA | *March - June 2019*

- Taught two lab sections covering the rendering pipeline in computer graphics through programming exercises in Unity.
- The class met twice a week and had about 25 students per class. Attended lectures twice per week to remain on page with the content of the class, answered questions on Slack, and was open to scheduling office hours with students as needed.
- Used an active learning teaching style to maximize student engagement coding shaders during class.

Project Lead for RuleVis, Creative Coding Lab, UCSC | Santa Cruz, CA | *January - June 2019*

- Worked as a project manager coordinating between research collaborators at Harvard Medical School and other computer science and design students. Was the first author on a short paper published in VIS 2019. [https://arxiv.org/abs/1911.04638]
- Coordinated meetings between several graduate students and an undergraduate student in developing a web-based graphical biological rule building tool that quickly converts between the graphical user interface, visual representation, and corresponding *Kappa* syntax. Accepted as a short paper at the VIS 2019 conference, presented in Vancouver.

Lead Developer for IGM-Vis, Creative Coding Lab, UCSC | Santa Cruz, CA | *August - December 2018*

- Collaborated with Astrophysics postdoc to develop a web-based software tool for comparing Hubble Space Telescope spectral observations to the known location of galaxies obtained from the SDSS catalog, with domain expert user evaluation.
- Used d3.js to load and process data, and THREE.js to display galaxies and spectral skewers in cartesian coordinates.
- Full paper published in EuroVis 2019. Paper presentation in June 2019 in Porto, Portugal. [https://arxiv.org/abs/1812.07092]

Clinical Data Analyst, Tempus Labs | Chicago, IL | *October 2017 – August 2018*

- Cleaned, structured, and coded hundreds of data points for thousands of cancer patients from clinical progress notes from electronic medical records for research and pharmaceutical clients.
- Abstracted data and performed quality assurance for patient timelines with lung, breast, and ovarian cancer types.
- Used python's natural language toolkit package to format unstructured text, which increased productivity.
- Performed data analysis and visualization on publicly available cancer datasets with survival analysis plots in R.

DePaul Purpose Pitch Competition Semifinalist, Pocket Farms | Chicago, IL | *Spring 2017*

- Led a team of students to develop and propose an idea for a lightweight, portable aeroponic greenhouse system that would self-regulate environmental conditions for optimal plant growth, to have been deployed in underutilized neighborhoods.
- Drafted and annotated the design concept in AutoCAD, as well as rendered a 3D model in Autodesk Fusion.
- Created a budget for the cost of components and construction of a prototype.

Far Horizons Lab Research Fellowship, Adler Planetarium | Chicago, IL | *Summer 2016*

- Researched, developed, and implemented an autonomous pressure-sensitive altitude adjustment system to be used for high altitude helium-filled weather balloon experiments using C Code for Arduino, EAGLE for circuit board design, Autodesk and Makerbot for 3D design and printing, and Excel and Matlab for data analysis and visualization.
- Interacted with visitors, communicated technical information to other lab members, volunteers, and summer campers.

Additional Skills

Code: Arduino, C/C++, HTML, CSS, Conda, Javascript, Jupyter Notebook, Matlab, Processing, Python, R, Raspberry Pi, SQL
Design: Adobe Creative Suite, AutoDesk Software (AutoCAD, Fusion 360, Revit), Google Sketchup and 3D printing
Office: Proficient with Apple, Linux, and Windows, Google Apps, Microsoft Office, maintaining spreadsheets