David Abramov

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Education

Ph.D. Candidate, Computational Media | University of California Santa Cruz, Baskin School Of Engineering | Sept 2018–June 2023
B.S., Biology and Physics (double major) | DePaul University, College of Science and Health | Chicago, IL | Sept 2013–June 2017

Work History

Graduate Student Researcher | Creative Coding Lab at UCSC | Santa Cruz, CA | Fall 2018 - Present

CosmoVis: Designed and developed a web app for astronomers to interactively visualize large cosmological simulation datasets.
- *Role*: Lead full stack developer, UI/UX designer. First author on paper accepted to IEEE Transactions on Visualization and Computer Graphics [link]. Presented at IEEE VIS 2022 in Oklahoma City, OK.
- *Technologies*: kubernetes, docker, virtual machines, html/css/js, python, webgl, three.js, d3.js, flask, socketio, rabbitmq, celery, nginx, gunicorn, hdf5, figma, aws s3 & ec2, github, gitlab, shaders, 3D volume rendering, raycasting, yt, trident, cloud services

RuleVis: Developed a web app for computational biologists to visualize and interactively create protein-interaction "rules".
- *Role*: Lead developer. First author on a short paper accepted and presented at IEEE VIS 2019. [link]
- *Technologies*: javascript, html, css, interactive data visualization, github, graphs, forced network graph, regex

IGM-Vis: Developed a web app for astronomers to visualize galaxies and spectral sightlines from the Sloan Digital Sky Survey.
- *Role*: Lead developer. Second author on paper accepted and presented at Eurographics EuroVis 2019 in Porto, Portugal. [link]
- *Technologies*: javascript, html, css, three.js, d3.js, webgl, interactive data visualization, github

Teaching Assistant, Multiple Courses | Computation Media Department at UCSC | Santa Cruz, CA | Spring 2019 - Spring 2023
- TA for the following courses: Recording Digital Audio, Musical Data, Game Graphics and Real-Time Rendering, Game Engines.
- Attended lectures, held office hours, graded assignments, projects and quizzes, set up and maintained class Discord servers.
- Taught multiple lab sections covering the graphics rendering pipeline with programming exercises in Unity and OpenGL.
- Technologies: unity, hlsl/glsl, opengl, shaders, blender, c#, c++, reaper, python, machine learning

Graduate Student Instructor for *Game Technologies* | Computational Media Department at UCSC | Santa Cruz, CA | Fall 2022
- Course Description: Covered major game engine features such as input, collision, animation, model import, lighting, camera, rendering, textures, and particle systems. Introduction to a C# scripting language, custom game logic, and programming patterns.
- Lectured 3x a week for 112 art and game design students. Created and graded three assignments. Managed 2 TAs.
- Technologies: unity, c#, glsl, shaders, blender, discord, github

Mentor | Polygence | Remote, Part-time | Spring 2022 - Present
- Mentor and guide international high school students interested in digital media and technology research as they work on a project of their choosing for ten 1 hour Zoom sessions for a few months. Students go on to share their projects in various venues.
- Projects include an escape game and paper review on gamut color mapping algorithms and techniques.

Data Visualization Intern | En Flujo Lab at Universidad de los Andes | Bogotá, Colombia & Remote | Summer 2021, 2022
- Historical covid data: Added interactive functionality to a visualization made in d3.js of predicted vs actual COVID cases.
- Temporal word cloud: Developed a vis tool for showing word frequency over time in word "stream" using three.js.
- Fake news exploratory analysis: Used machine learning techniques to show fake news frequency and sentiment analysis.
- Technologies: javascript, typescript, yarn, d3.js, three.js, html, css, python, npm

Data Visualization Computer Science Lead 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 using D3.js, THREE.js, HTML/CSS/JS through an iterative design process consisting of domain expert interviews to understand the science team's needs and weekly critique sessions from design and UX experts.

Jr. Data Analyst | Tempus Labs | Chicago, IL | Fall 2017 – Fall 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.

Additional Skills

Code: Arduino, C#, C++, HTML/CSS, Conda, Javascript, Matlab, Processing, Python, R, Raspberry Pi, SQL, OpenGL/WebGL
Media: Adobe Creative Suite, AutoDesk (AutoCAD, Fusion 360, Revit), Blender, 3D printing, Unity, Unreal, Reaper, Ableton
Office: Proficient with Apple, Linux, and Windows, Google Apps, Microsoft Office, maintaining spreadsheets