Aaron Danen

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Education

School: University of California, Davis
Major: *Computer Science and Engineering | GPA: 3.9*
Expected Graduation: *June 2026*
Coursework: Data Structure and Algorithms, Machine Dependent Programming, Discrete Mathematics

Skills

Languages: C/C++ (coursework, projects), C#, HTML/CSS (project), python (projects), Java, R (novice)
Software: Linux, Make, gcc – Git, Vim, AWS, Cloudflare – Pandas, Matplotlib – Visual Studio, ASP.NET

Experience

Data Science in Astrophysics, *Internship, UC Santa Cruz* *June 2022 - June 2023*

- Built a data pipeline to **automate retrieving and processing raw telescope data** using Python
- Designed my software to be fully autonomous and run in the early morning to **save several hours** for scientists during the day when there is the greatest demand for compute time
- Created day binned lightcurves and spectral analysis graphs with Matplotlib so astrophysicists can get up-to-date information on Blazer Mrk421 with a **simple web interface**

Undergraduate Research *September 2024 - Present*

- Working under Dr. Olivier Hervet to **optimize the computational efficiency** of Bjet_mcmc, a statistical modeling program that fits multi-wavelength spectral data of AGNs
- Test and tune different Monte Carlo Markov Chain algorithms, **improving efficiency by 40%**
- **Improve underlying C algorithms** to reduce time and memory requirements

Projects

aadanen.dev, *an ASP.NET MVC Portfolio Website* *June 2023 - April 2024*

- Developed an intuitive, responsive and visually pleasing UI with HTML, CSS, and bootstrap
- Used C#, Postgres and ASP.NET to respond to most **requests in less than 100 ms**
- Configured IIS mime-types and file compression settings to deliver the Bullet Hell Game web assembly **bundle in less than 500 ms** and save users bandwidth
- Securely **hosted my site using AWS and IIS**, and deployed my code to production using WebDeploy

Bullet Hell Game, *a retro 2D game using Unity* *December 2022*

- Utilized c# to develop algorithms to generate **pseudo-random enemy movement and attack patterns**
- Used the **singleton design pattern** to handle menu navigation, game state, and enemy spawn logic
- Learned Aseprite to design **custom level and character sprites** in a retro, pixel art style while keeping with the theme of a dark fantasy dungeon
- Collaborated with my partner to **compose original music** and sync it to visual effects to evoke the desired emotional response from the player
- Players noted the game was fun and exhilarating despite being mechanically simple