Alex Eidt

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Experience

Paul G. Allen School of Computer Science and Engineering **January 2021 – August 2021**
Teaching Assistant *Remote*

- Teaching Assistant for CSE 163, an Intermediate Data Programming course focused on learning Data and Image Analysis in Python using analytic and machine learning techniques.
- Libraries taught were pandas, numpy, scikit-learn, matplotlib and seaborn.
- Co-lead weekly quiz sections of 20 students with fellow TA to review course concepts and go through example exercises.
- Held weekly office hours to answer student questions and graded weekly homeworks and final projects.

Open Source Contributions and Projects

Open Source Projects on Github | *Python, Go, Java, Kotlin, C++* **February 2019 - Present**

- Creator and Maintainer of open source packages and projects.
- 550+ stars, 10000+ downloads, 25+ forks on 26 repositories.

FFmpeg Wrapper | *Go, FFmpeg* **December 2021 - Present**

- Creator and Maintainer of an open source package in Go to provide simple, cross-platform frame by frame video reading/writing and webcam streaming using the multimedia tool FFmpeg. 5000+ downloads and 300 stars on Github.
- Created a similar tool to provide simple audio I/O including reading, writing and playing of audio files using FFmpeg.
- Implemented using FFmpeg subprocesses that communicate with Go via Stdin and Stdout pipes.
- Video I/O Tool: github.com/AlexEidt/Vidio. Audio I/O Tool: github.com/AlexEidt/aio.

ARM CPU | *Verilog* **October 2021 – December 2021**

- Built a 64-bit 5 stage pipelined ARM CPU with built in data forwarding and accelerated branches.
- Implemented a basic assembly language featuring ALU Operations, Loads, Stores, Branches and Comparisons.
- Created test benches for all sub-modules and simulated them with a hardware simulator to ensure correct behavior.

Seam Carver | *Java* **August 2021 – October 2021**

- Created a content aware image resizer (Seam Carver) with a Graphical User Interface (GUI) that can resize images vertically and horizontally in real time. github.com/AlexEidt/Karve.
- Features object removal and preservation via mouse highlighting.
- The GUI allows users to drag and drop images into the application, toggle seam highlighting, and prevent the GUI from updating to boost performance.
- Uses all CPU Cores in parallel for faster carving.

ASCII Video Renderer | *Python, Numpy* **June 2021 – September 2021**

- Created a script to quickly convert any video file into ASCII form using NumPy vectorization. 100 Stars on Github. github.com/AlexEidt/ASCII-Video.
- Developed a novel ASCII rendering algorithm that achieves conversion speeds of 30 FPS on Full HD video (1920x1080).
- Runs 4000x as fast as conventional ASCII image converters.
- Created a YouTube video explaining the algorithm. youtu.be/SzqKClkCi_0.

Extracurriculars

UW Solar in the Urban Infrastructure Lab **October 2018 – September 2020**
Web Master *Seattle, WA*

- Created and designed new UW Solar (uwsolar.be.uw.edu) website using Vue.js and Node.js with a fellow computer science undergraduate. Designed the Urban Infrastructure Lab website (uil.be.uw.edu) using WordPress.
- Held weekly meetings with club officers, faculty, and UW Web developers to guide website design and host easily maintainable sites.
- Created documentation for future UW Solar students to easily understand, update and maintain the UW Solar website.
- Project Lead for a project to get a solar array installed on the Manastash Ridge Observatory. Oversaw cost estimation, schematic, and solar array design with UW Solar team to create a proposal and energy audit for a ground mounted solar array at the Observatory.

Education

University of Washington (UW) **September 2018 – December 2021**
Bachelor of Science in Electrical and Computer Engineering GPA: 3.62 *Seattle, WA*

Technical Skills

Languages: Python, Java, C/C++, JavaScript, Kotlin, Go, Verilog
Developer Tools: VS Code, IntelliJ, Git, Linux, Bash