Jacob Jaffe

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EDUCATION

Sonoma State University — Fall 2024
BS in Computer Science | GPA: 4.0 — *Rohnert Park, CA*
Relevant Coursework: Software Engineering, Theory of Computation, Assembly and Computer Architecture, Problem Solving in a Team Environment, Operating Systems, Parallel Computing

University of Southern California — Fall 2022
BA in Applied Mathematics | GPA: 3.06 — *Los Angeles, CA*
Relevant Coursework: Data Structures and Object-Oriented Design, Discrete Methods in Computer Science, Introduction to Algorithms, Introduction to Artificial Intelligence, Numerical Methods

EXPERIENCE

R&D Software Engineer Intern — May 2023 - Present
Keysight Technologies — *Santa Rosa, CA*
- Improved calculation speed by 12.5 times and reduced double precision error propagation in the de-embedding software for the sampling oscilloscopes by porting the MATLAB script to C#, introducing parallelism, and employing numerical methods. The program adds and/or removes noise from a measured signal using network simulations and S-parameters.
- Developed high-level integration tests that automated interactions with the application's GUI and measured performance.
- Performed quality assurance for beta releases through hands-on testing of the hardware.

Undergraduate Research — August 2023 - Present
Sonoma State University — *Rohnert Park, CA*
- Building a distributed computing solution in C++ to find the optimal deterministic finite automata approximation of a non-regular language.
- Constructing the algorithms by reading relevant research papers in computation theory.

Math Tutor — December 2021 - Present
Mathnasium / Private
- Developed lesson plans for over 100 different students as the lead math instructor. Personally teaching up through the calculus series and linear algebra.
- Improved grades by at least a whole letter for the students taking remedial lessons.
- Co-wrote curricula in linear algebra and calculus 3 for Mathnasium. The lessons were written for high school students who wanted to learn more than what their schools' offered.

PROJECTS

Web Audio Sequencer *| Go, React, PostgreSQL* — May 2022 - Present
- A full-stack web application of a synchronized workspace that acts as a digital audio sequencer where users can upload and place audio samples to create small music clips. Currently planning to expand functionality to a full digital audio workspace.
- Uses WebSockets for synchronized edits across multiple concurrent users.

Granular *| C++, Juce*
- A granular synthesizer built in C++ with the Juce framework. It takes an audio sample and splits it into grains that make up the waveform for the synthesizer to then modulate.
- Utilizes simple DSP algorithms to implement digital low-pass/high-pass filters and digital distortion.

TECHNICAL SKILLS

Languages: C/C++, Go, C#, SQL (Postgres), JavaScript, HTML/CSS, MATLAB
Developer Tools: Git, Docker, Visual Studio, AWS, Unreal Engine, Neovim