Nevin Liang

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EDUCATION

University of California, Los Angeles

Concurrent Master of Science in Electrical and Computer Engineering (GPA 4.00/4.00) Jun 2023

- **Relevant Courses:** Deep Learning and Neural Networks, Data Communications and Telecommunication Networks, Speech and Image Processing Systems Design, Advanced Linear Algebra

Bachelors of Science in Computer Science and Engineering (Major GPA 4.00/4.00) Dec 2021

- **Relevant Courses:** Digital Signal Processing, Circuit Analysis and Creation, Electrical and Electronic Circuits, Computer Network Fundamentals, Digital Electronic Circuits, Programming Languages, Cybernetics, Formal Languages and Automata Theory, Applied Numerical Computing, Machine Learning, Algorithms and Complexity, Discrete Math, Statistical Reasoning, Artificial Intelligence, Computer Vision, Computer Architecture, Operating Systems, Computer Organization, Software Construction, Data Structures and Object Oriented Programming in C++ and Python, Logic Design of Digital Systems, Advanced Digital Design Laboratory, Probability and Statistics for Electrical Engineers, Systems and Signals, Feedback Control, Digital Design Laboratory
- **Self Study:** Harvard Statistics 110, Machine Learning by Stanford, Akuna Options 101

EXPERIENCE

Speech Processing and Auditory Perception Laboratory *May 2022 - Present*

Researcher

- Researching the use of CTC alignments as latent variables for non-autoregressive speech-transformer.
    - Implementing models on Children Speech Data specifically
- Single-step NAT (coined CASS-NAT by us) achieves the state-of-art NAT results on both Librispeech and Aishell corpus while being much more efficient by extracting token-level acoustic embedding for each token in parallel.

Verkada, Inc. *June 2022 - Present*

Software and Firmware Engineer

- Creating firmware for a locked alarms hub system running Android. Originally our product used an iPad OS app to run our hub software, but after my project ported the services over to Android, our margins for the hub product greatly increased.
- Developing CV software for high-range camera systems including writing a proprietary person-detection algorithm for Verkada cameras

Large-scale Machine Learning Group (BigML Labs**)** *Apr 2021 - Present*

Researcher

- Investigating the efficacy of a novel convex loss function for DNNs on real world datasets and big data
    - 2-layer NN with only 150 MNIST training examples achieved 97% accuracy on the entire 2,500 example MNIST test set.
- Creating data-efficient methods to identify representative elements for improved reliability and safety

Tesla, Inc. *Jun 2021 - Aug 2021*

Embedded Systems Engineering Intern

- Created development tools to debug the Infotainment System during post-manufacturing. Made use of FreeRTOS, SocketCAN.
- Investigated and tested signal processing infrastructure for an internal company-wide end-to-end build system using Python.

PROJECTS AND SHORT PAPERS

Voice-activated Robot Control System *Oct 2021 - Dec 2021*

Digital Design Laboratory CS 152B

- Implementing a wireless voice-activated robot using two FPGAs communicating over Bluetooth.
    - Uses DeepSpeech on an offloaded processor to interpret voice commands
    - Incorporates MicroBlaze soft processor on both of the FPGAs to control the system

Wireless Sensor Network Optimization *Mar 2021 - Jun 2021*

Applied Numerical Computing EE 133A

- Application of the Levenberg-Marquardt method to optimize locations of nodes in a wireless sensor network given tower locations and approximate distances; built an iterative fuzzy finding approach to pinpoint optimal placement

Car Convoy and Traffic Fluidity *Mar 2021 - Jun 2021*

Feedback Control Theory EE 141

- Feedback controllers for car convoys to maintain separation while driving through traffic. Written in Matlab and Simulink.
- Implemented solution for nonlinear systems by approximating with linear systems then using a systematic PID control approach.

Embedded Systems Sensor *Feb 2021 - Mar 2021*

Operating Systems CS 111

- Detects environmental changes remotely and transmits data over Secure Socket Layer Encryption to a centralized server. Mainly low-level coding and written entirely in C.

HONORS

- USAMO Qualifier (4x), USA(J)MO Honorable Mention
- USAPhO Silver Medal (2x)
- USACO Platinum, CodeForces Candidate Master Rank
- Sandia National Laboratories Space Blimp Hackathon 2nd Place