Sonika Vuyyuru

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EDUCATION

University of California, Berkeley | GPA: 3.86 **Berkeley, CA**
Honors, Computer Science and Cognitive Science Double Major *May 2024*

- Relevant coursework: CS182: Deep Learning [A], CS189: Machine Learning [A], CS188: Artificial Intelligence [A], EECS127: Optimization Models [A-], CS170: Algorithms [A-], CS61C: Computer Architecture [A], CS70: Discrete Math and Probability [A], MATH54: Linear Algebra and Diff. Equations [A], MUSIC30: Computational Creativity in Music [A]
- Selected as member of 110 person EECS Honors Program, with responsibilities including conducting a Senior Honors Thesis
- Cal Alumni Association Leadership Award Merit Scholarship

TECHNICAL SKILLS

- Languages: Python, Java, C, MATLAB, RISC-V, SQL, JavaScript, and Verilog
- Libraries and Tools: HuggingFace, PyTorch, TensorFlow, SciPy, Sklearn, NumPy, React, Git, AWS Cloud, Django, and Simulink

PROJECTS

Personalized EECS Class AI Assistant | tinyurl.com/sonika-eecs101-ml-project

- Deep learning project to fine-tune LLaMA2 LLM for answering class specific questions by training on class forum data
- Implemented Parameter Efficient Fine-Tuning (PEFT) method Low-Rank Adaption (LoRA) for optimal model performance
- Explored the impact of pre-training on a general StackExchange-Q&A dataset to improve improve BERT score of responses

Concentration-Controlled Helicopter

- Hacked electronic hardware of toy helicopter, using Python and Arduino to make it mind-controllable by user's concentration
- Designed a circuit that sends a PWM wave digital output to mimic the sensitive microvolt range of controller's potentiometer
- Deployed a software solution to prevent the helicopter from flying above a height of 8 ft. by live-tracking its current height

EXPERIENCE

Neural Systems and Data Science Lab, Lawrence Berkeley National Laboratory **Berkeley, CA**
Research Assistant *Aug. 2023 - May 2024*

- Developing novel statistical machine learning tool for supervised discovery of dynamically important endogenous neural subspaces that 'cause' exogenous behavioral dynamics through linear dimensionality reduction using predictive information
- Analyzing tool on high-dimensional, noisy speech and synthetic data, comparing performance against PCA and other methods

NASA, Glenn Research Center **Cleveland, OH**
Machine Learning Engineering Intern *May 2023 - Aug. 2023*

- Built and trained neural networks to find optimal control law to minimize transient stall margin in novel hybrid-electrified gas turbine engine, thereby reducing size and weight of engine and increasing efficiency at various operating conditions
- Utilized a genetic algorithm to generate data from AGTF30 model with thermal conditions, deriving a baseline control schedule
- Published conference paper on methods and results from the research to 2024 AIAA SciTech

Multiply Labs **San Fransisco, CA**
Software Engineering Intern *May - Aug. 2022*

- Built and deployed production-level software features in cloud robotic system for cell therapy and personalized medicine
- Developed "one-click" device setup system to speed up deployment of new IOT devices by 50% by developing individual, device-specific AWS Cloud Formation Stacks with the device's resources, such as Secrets, Alarms, and EC2 Instances
- Deployed a Secrets and LUKS Encryption Key Rotation Lambda with CloudWatch logs as a cluster security measure
- Reduced testing time by 30% with automated unit and integration tests, utilizing Pytest fixtures, context managers and mocks

OpenBCI | tinyurl.com/sonika-openbci **Brooklyn, NY**
Engineering Intern *May - Aug. 2021*

- Helped design, test, and assemble electronics and hardware on VR multi-modal bio-sensing (EEG, EMG, etc.) headset, Galea
- Designed and engineered multiple in-house demos, including tic-tac-toe game that is controlled by eye movement
- Tested and optimized 10+ community projects using OpenBCI GUI and Networking Streams (LSL, OSC, UDP)

ACTIVITIES

UC Berkeley Electrical Engineering & Computer Science (EECS) Course Staff **Berkeley, CA**
CS61C [Computer Architecture] uGSI/TA *June 2021 - May 2024*

- 4th time returning TA working with students to reinforce core computer architecture concepts through weekly labs and sections
- Apply concepts like Parallelism (thread and data-level), Memory Management, CPU architecture, Caching, Virtual Memory

Berkeley Model United Nations | github.com/bmun/huxley | huxley.bmun.org **Berkeley, CA**
VP of Technology *Sep. 2020 - May 2024*

- Lead team of developers to create new features, such as messaging capabilities and automated waiver submission checking, for open-source Model United Nations software used by 2000+ by utilizing popular web frameworks, such as React and Django