GEFFEN COOPER

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EDUCATION

The University of Texas at Austin Aug. 2022 - present
Ph.D. in Electrical and Computer Engineering (GPA: 3.88/4.0)
· **Advisor**: Radu Marculescu (Systems Level Design Group)

University of California, Santa Barbara Sept. 2018 - June 2022
B.S. in Computer Engineering (GPA: 3.97/4.0)
· Regents Scholar

RESEARCH INTERESTS

Time series, Efficient Deep Learning, TinyML, Human Activity Recognition, Batteryless IoT

RESEARCH PUBLICATIONS

Geffen Cooper, Radu Marculescu, "Packet Pruning: Finding Better Energy Spending Policies for Batteryless Human Activity Recognition," IEEE International Conference on Body Sensor Networks (BSN 2024).

Geffen Cooper, Radu Marculescu, "Beyond Thresholds: A General Approach to Sensor Selection for Practical Deep Learning-based HAR," IEEE/ACM International Conference on Internet-of-Things Design and Implementation (IoTDI 2024).

Geffen Cooper, Tianda Huang, Radu Marculescu, "Demo Abstract: A Prototype for Machine Learning with Batteryless Sensors," IEEE/ACM International Conference on Internet-of-Things Design and Implementation (IoTDI 2024).

Allen-Jasmin Farcas, **Geffen Cooper**, Hyun Joon Song, Afnan Mir, Vincent Liew, Chloe Tang, Prithvi Senthilkumar, Tiani Chen-Troester, Radu Marculescu, "Demo Abstract: Online Training and Inference for On-Device Monocular Depth Estimation," IEEE/ACM International Conference on Internet-of-Things Design and Implementation (IoTDI 2024).

WORK EXPERIENCE

Analog Devices June 2022 - August 2022
Embedded AI Applications Intern, Embedded AI Team *Dallas, TX*
· Implemented a few-shot domain adaptation technique to fine-tune CNN models for the MAX78000 microcontroller with onboard CNN accelerator
· Adapted pretrained models using 5-10 images per class from the onboard camera to improve classification accuracy on camera images by 20-40%

USC SURE, Institute for Creative Technologies June 2021 - September 2021
Undergraduate Research *University of Southern California (Remote)*
· Worked under Professor Mohammad Soleymani in the Intelligent Human Perception Lab
· Developed a multimodal deep learning model to assess psychomotor retardation from audio-visual recordings of clinical interviews

Brain Corp June 2020 - September 2020
Embedded Software Intern, Firmware Team *San Diego, CA (Remote)*
· Created a robust Linux based C/C++ application using socketCAN to update the firmware of the vehicle controller used in Brain Corp's fleet of autonomous floor scrubbing robots

FLIR Systems April 2019 - August 2019
Software Intern, Security Team *Goleta, CA*
· Wrote bash scripts and python GUI for running diagnostics, debugging, and configuring thermal cameras

COURSEWORK

Convex Optimization, ML for Real World Networks, Digital Video Processing, Human Signals, Probability and Stochastic Processes, Applied ML, Generative AI, Embedded IoT, Learning Based Optimal Control

SKILLS

Python, C, Bash, PyTorch, TensorFlow, TensorFlow Lite, Git

ADDITIONAL PROJECTS

Few-Shot Gesture Recognition Human Signals Course 2023

· Trained an LSTM with attention using sequences of 3D hand landmarks and used embeddings at inference time to classify new gestures from 3-5 examples

Graph Neural Network Compression Machine Learning for Networks Course 2022

· Used graph partitioning and knowledge distillation to reduce memory during inference for node classification

TinyML Projects with Max78000 Collaboration with Analog Devices 2021-2022

· Deployed image classification and detection models with MAX78000 AI microcontroller with CNN accelerator

· **G. Cooper**, V. Benenati, B. Long, K. Copeland, T. Ekaireb, S. Kumar, B.S. Manjunath, Y. Isukapalli, "Autonomous System for Sorting Objects at The Edge," Proceedings, International Telemetering Conference (ITC), Glendale, Arizona, Oct 24-27, 2022.

· **G. Cooper**, B.S. Manjunath, and Y. Isukapalli, "Edge Machine Learning for Face Detection," Proceedings, International Telemetering Conference (ITC), Las Vegas, Nevada, Oct 25-28, 2021.