AIWEN XU

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EDUCATION

University of California, Santa Barbara 09/2018 - Present
Ph.D. Candidate in Computer Science GPA: 4.00/4.00
Expected graduation in 06/2024

New York University Shanghai 09/2014 - 05/2018
B.S. in Computer Science (with honors), B.S. in Mathematics GPA: 3.96/4.00

WORK EXPERIENCE

Google 06/2023 - 09/2023
Software Engineering Intern

- Implemented recitation-based dynamic few-shot prompting in Bard, a chat-based AI tool based on large language models
- Developed a dynamic few-shot prompting recipe in Bard via retrieving examples similar to the current user query from the supervised training mixture, based on cosine similarity of T5 sentence embeddings
- Evaluated and compared Bard performance in different pillars (creativity, factuality, coding, reasoning) and settings (supervised finetuning, retrieval-based few-shot prompting, and a mixture of both)

Google 06/2022 - 09/2022
Software Engineering Intern

- Increased the top-1 accuracy of the Universal Vision Transformer (UViT) on ImageNet from 80% to 82% via hyperparameter tuning and distillation
- Reduced the latency of UViT by 15% by identifying a performance bottleneck and reimplementing the multi-head attention layer to remove unnecessary transposes in Keras and Tensorflow
- Performed neural architecture search and quantization to further reduce the latency of the model by 54% compared to the baseline while maintaining similar accuracy

PROJECTS

Multimodal Deep Learning Model of Mouse Visual Cortex 02/2023 - 05/2023
Published in NeurIPS 2023: Thirty-seventh Conference on Neural Information Processing Systems

- Designed a novel deep-learning multimodal model of the neural activity in mouse visual cortex (V1) in PyTorch and achieved state-of-the-art performance
- Analyzed the model with saliency maps to demonstrate the explainability and reveal the contribution of behavior to mouse V1 activity
- Computed most exciting stimulus of the model via gradient ascent to uncover a diverse set of visual receptive fields

Prediction of Eye Position in Freely Moving Mice 01/2023 - 06/2023

- Utilized regression and transfer learning with pre-trained ResNet and EfficientNet to predict horizontal eye positions in freely moving mice and attained 0.53 R^2
- Achieved explainability with GradCam to reveal that the peripheral visual field drove eye movement

Scene Simplification with Deep Learning for Retinal Prostheses 04/2020 - 12/2020
Published in Augmented Humans International Conference 2021 with honorable mention

- Created a scene simplification algorithm combining semantic segmentation (Mask-RCNN) and depth cues (CNN-based monocular depth estimation) using PyTorch, scikit-image and OpenCV
- Demonstrated that semantic segmentation could support outdoor scene understanding for retinal prosthesis users significantly better than saliency or depth ($p < 0.001$) via an accessibility user study with virtual patients

Multimodal Deep Learning Classification of EEG 01/2019 - 05/2019
Published in International Conference on Multimodal Interaction 2019

- Implemented a novel state-of-the-art multimodal deep neural network for EEG classification under noise from physical activity in PyTorch
- Analyzed the classification performance of the neural network with precision, recall and confusion matrix