Ayda Sultan

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github.com/ashhass

Education

Addis Ababa University — Addis Ababa, Ethiopia
Bachelor of Science in Software Engineering — *Sept. 2018 – July 2023*

Experience

Research Intern — Oct. 2023 – May 2024
KAUST (King Abdullah University of Science and Technology) — *Thuwal, Saudi Arabia*

- Implemented and trained concept bottleneck models on the CUB dataset and analysed the robustness of concepts learned
- Identified a crucial flaw on the causal inference assumption of current CBMs
- Explored ways to create inherently interpretable models by injecting human concepts into various layers
- Studied methods for removing harmful concepts or biases from models while maintaining model performance

Research Assistant — May 2022 – May 2023
University of Michigan — *Ann Arbor, MI, United States*

- Implemented and trained UNet and HRNet models for hand and object segmentation using PyTorch and NumPy
- Improved model generalization across datasets with different data distributions
- Analyzed around 700K images and masks from egocentric and exocentric datasets, identified hidden model biases and used image augmentation techniques to mitigate these biases
- Achieved 3 AP higher hand segmentation performance on a holdout test set compared to Meta's Segment-Anything Model (SAM) using only about 2% of the images in the Segment-Anything dataset

Software Engineering Intern — March 2022 – May 2022
Ministry of Innovation and Technology — *Addis Ababa, Ethiopia*

- Developed an application to collect data of 500 various Amharic letter hand writings
- Implemented simple MLPs to train models to recognize handwritten Amharic letters
- Built a web application that takes users handwriting and converts them to a printed format using Flask and Python

Projects

Modernizing Public Security Systems | *Python, Flask, PyTorch, NumPy* — January 2023 – July 2023

- Conducted extensive literature review concerning effective and efficient strategies to identify anomalies from real-time video data
- Implemented convolutional auto encoders and LSTMs for video anomaly detection and achieved < 1 AP false negatives when detecting anomalies
- Created a web application to display live detections of anomalous behaviour from incoming video data

Publications

Towards A Richer 2D Understanding of Hands at Scale — NeurIPS 2023

Awards

Selected as an AURA program scholar (8% selection rate) and received a $7500 award to participate in a research program sponsored by Google, Meta and Intel. — March 2022

Skills

Languages/Libraries: Python, Flask, PyTorch, NumPy, Matplotlib
Soft Skills: Academic Writing, Attention to detail, Critical Thinking

Volunteer Experience

Gave a technical workshop on the historical development of AI algorithms to ALX Ethiopia students — March 2024