

# Ayda Sultan

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## EDUCATION

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### Addis Ababa University

*Bachelor of Science in Software Engineering*

Addis Ababa, Ethiopia

*Sept. 2018 – July 2023*

## PUBLICATIONS

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### Reasoning-Driven Jury System for LLM Evaluation

Ayda Sultan

WiML Workshop @ NeurIPS 2024

### Towards A Richer 2D Understanding of Hands at Scale

Tianyi Cheng\*, Dandan Shan\*, **Ayda Sultan**, Richard Higgins, David Fouhey

NeurIPS 2023

## EXPERIENCE

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### Software Engineer

*Gebeya Talent*

May 2024 - Ongoing

*Addis Ababa, Ethiopia*

- Wrote complex SQL queries to extract, analyze, and transform large datasets for client's business intelligence and application functionality
- Collaborated with UX designers and front-end developers to translate user-centered designs into functional interfaces

### Research Intern

*KAUST (King Abdullah University of Science and Technology) — PRADA Lab*

Oct. 2023 – March 2024

*Thuwal, Saudi Arabia*

- Implemented and trained concept bottleneck models on the CUB dataset and analysed the robustness of concepts learned
- Tested the interpretability of sparse representations extracted from the continuous hidden states of transformer models by mapping them to annotated concept sets
- Studied methods for removing harmful concepts or biases from models while maintaining model performance

### Research Assistant

*University of Michigan — FAIL Lab*

May 2022 – May 2023

*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

### Software Engineering Intern

*Ministry of Innovation and Technology*

March 2022 – May 2022

*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

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### LLM Diversity Evaluation — Cohere for AI Community Research

November 2024 – Ongoing

- Investigating the diversity of outputs generated by different LLMs
- Exploring methods to enhance lexical and semantic diversity in creative writing generated by LLMs

### Revisiting Historical AI Algorithms — Personal Project

August 2024 – Ongoing

- Wrote and open-sourced the first public implementation of the Georgetown experiment
- Wrote a blog post about implementation details and the motivation for the experiment
- Open-sourced a Python implementation of the first chatbot — ELIZA

## Modernizing Public Security Systems — Bachelor's Project

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

## AWARDS

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NeurIPS 2024 WiML Travel Grant

September 2024

AURA program scholar (8% selection rate) — Awarded \$7,500 to participate in a research program at UM sponsored by Google, Arm and Intel

March 2022

## SKILLS

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**Languages/Libraries:** Python, Flask, PyTorch, NumPy, Matplotlib, SQL

**Soft Skills:** Academic Writing, Attention to detail, Critical Thinking

## VOLUNTEER EXPERIENCE

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Served as a reviewer for WiML workshop collocated with NeurIPS 2024

September 2024

Conducted a workshop on the historical development of AI algorithms for ALX students

March 2024