Yuyang E. Lou

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EDUCATION

University of Washington | Bachelor of Science in Computer Science — Expected Graduation: May 2027

SKILLS

Languages: Java, Python, C++, SQL, JavaScript, HTML/CSS
Libraries & Frameworks: Node.js, React.js, PostgreSQL, NumPy, OpenCV, PyTorch
Tools & Technologies: AWS (EC2, Lambda, S3), Firebase, Junit, PyTest

WORK EXPERIENCE

Research Assistant
Meta Fundamental AI Research | Seattle, WA — January – June 2025

- **Researched with Professor Ruta Desai at Meta Fundamental AI Research Lab on memorization architectures of LLMs on long-horizon preference -based interactions.**
- Proposed Pref-LSTM, a hybrid approach that utilized BERT-based text classifier for preference identification and LSTM-based architecture for memory storage that further soft-prompts downstream LLM for preference-assisted responses.
- Manually curated a turn-based conversation dataset that contains 8452 unique conversations for preference detection.
- BERT-based preference detector reached 92% accuracy on our custom dataset.

Vision Team Member — September 2023 - Now
Advanced Robotics at University of Washington | Seattle, WA

- **Maintained and contributed to a custom robot vision library for robot trajectory prediction and robot localization in annual Robomaster Competition North America.**
- Reimplemented YOLOv8 object detection architecture from scratch using PyTorch and Python.
- Applied Particle Filter to predict and correct trajectory and orientation of adversarial robots, integrating both sensory data and vision cues.
- Using Next.js, Prisma, SWR, and PostgreSQL, created an internal software platform for data annotation.

Software Engineer Intern — May - September 2024
Fechii Fragrance & Flavors | Hybrid

- **Led the development of ChromStation, a high-performance spectrometry data processing interactive system equivalent to Agilent's Mass Hunter.**
- Used S3 to store large mass spectrometry collection database and fragrance formula repositories.
- Used EC2 for fast, consistent data processing pipeline that executes spectra-matching engine written in C++.
- Built frontend interactive visualization system using React.js and Plotly.js.
- New Software increased the chemical report generation by 66%, from 120 minutes to 40 minutes.

PROJECTS

No-Deception

- **A google extension that fact-check internet information against scientific articles using RAG with LLMs.**
- Maintained a backend vector database using ChromaDB and python that hosts vectorized embeddings of scholar articles.
- Built augmented AI query service from Gemini API and retrieval algorithms provided from ChromaDB
- Created frontend on chromium browser extensions using react and REST API.

ScanLite

- **A handheld 3D scanner that is capable of scanning and creating 3D models of object in real-time.**
- Applied Extended Kalman Filter to fuse the sensory data from 6DOF gyroscope and the depth camera to effectively accommodate gyroscope drift and the slower computational time of ICP algorithm for pose estimation.
- Arduino board and programming used to read input signal from gyroscope .