Chang Zeng

Amherst, MA, 01002 • changzeng@umass.edu • + 1 (617) 888-3470
linkedin.com/in/chang-zeng • siegandy.github.io

EDUCATION

University of Massachusetts Amherst **Amherst, MA, 2018 - Present**
Ph.D. in Computer Science **4.000 GPA**
Master of Science, Major in Computer Science, Bay State Fellow **3.895 GPA**
Bachelor of Science, Major in Computer Science; Major in Environmental Science **3.832 GPA**

AWARDS

- **Bay State Fellowship** at the University of Massachusetts Amherst.
- **Dean's List** recipient for the following semesters: Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, and Spring 2022 at the University of Massachusetts Amherst.

TECHNICAL SKILL

- **Programming Languages**: Python, Go, C#, C++
- **Library & Framework**: TensorFlow, PyTorch, NumPy, Pandas, Docker, OpenCV
- **Tools:** Unix/Linux, Git, AWS S3, Kubernetes, Docker, Node.js, PostgreSQL

PUBLICATION

- **Cyrus, C. Chang, Z., and Yair, Z. "AI Alignment Via Power-Mean Elicitation." AAMAS 2026.**
- **Cyrus, C. Chang, Z., and Yair, Z. "Is Your LLM a Capitalism?" Work in Progress.**

RESEARCH EXPERIENCE

Agentic Retrieval **Amherst, MA**
Research Assistant (**Python, Retrieval, Agentic System**) **Nov 2025 - Present**

- Designed a multi-level retrieval stack that fuses **lexical and dense** signals across stages and subqueries to strengthen overall ranking quality.
- Developed an **agentic** loop that prioritizes parallel reasoning chains and coordinated search branches to expand and align search intents.
- Built a **SearchR1**-style training and inference pipeline that carries information from previous hops and prior plan iterations, enabling richer context for better planning and retrieval.

Structured Knowledge Retrieval **Amherst, MA**
Research Assistant (**Python, Retrieval, Representation**) **May 2025 - Nov 2025**

- Crafted a **field-aware retrieval** stack that encodes field names directly into field values, preserving schema semantics during matching and reducing field ambiguity.
- Devised **bidirectional field representations** that learn general column embeddings from column values and reuse them to augment each column's value representation.
- Implemented **field-aware scoring** modes that blend field and its value signals, stabilizing multi-field ranking and improving signal balance across fields.

Personalized Product Search **Amherst, MA**

Research Assistant (**Python, Recommendation System, User Features**) **Dec 2024 - May 2025**

- Engineered an iterative **self-training** pipeline that leverages **synthetic datasets** from multiple LLMs with **adaptive label smoothing** to boost label quality.
- Extracted and refined rich **user embeddings** and latent preferences from historical interactions using LLM-based encoding, enhanced via **adaptive hard-negative sampling** during fine-tuning.
- Developed a multi-stage fine-tuning framework to integrate user profiles into **personalized search** to jointly optimize query and item representations through **latent embedding** or **in-context prompt**.

AI Alignment Via Power-Mean Elicitation **Amherst, MA**

Research Assistant (**Optimization, Algorithm, Fairness Division**) **Sep 2022 - May 2024**

- Modeled human and LLM decision-making processes by analyzing the behavior of the **Weighted Generalized Means** class in real-world scenarios involving multiple stakeholders.
- Created flexible, robust distance **metrics** to quantify **welfare disparities** by comparing utility and disutility outcomes among diverse stakeholder groups.
- Conducted **minimax complexity analysis** to evaluate the **algorithm**'s **efficiency** for **proper and improper epsilon-elicitation** of fairness concepts.

WORK EXPERIENCE

X-Camp Tech Team Intern **Remote, US**

Software Engineer (**Go, Git, Test & Debug, CI/CD, Kubernetes, Docker**) **Jun 2023 - Aug 2024**

- Designed and developed a **scalable architecture** using **Golang** to seamlessly integrate Zoom API functionalities into existing systems, resulting in an improved teaching and learning experience.
- Utilized an automated **CI/CD** workflow for building and deploying to a remote **Kubernetes** cluster, facilitating seamless service scaling and management in a **containerized** environment.

PROJECT EXPERIENCE

Wuhuu Information Sharing Platform **Amherst, MA**

Software Engineer (**Python, Crawler, AWS S3**) **Sep 2022 - Oct 2023**

- Developed customized **crawlers** utilizing Python to systematically gather data from social platforms, focusing on user engagement trends, content popularity, and sentiment analysis.
- Implemented a robust storage infrastructure using **AWS S3** to securely store and retrieve shared files, while optimizing data retrieval and minimizing latency.

Health Detection via Heartbeat Analysis **Amherst, MA**

Software Engineer (**Python, Deep Learning**) **Sep 2022 - Dec 2022**

- Developed an autoencoder to effectively **denoise** individual heartbeats from electrocardiogram signals, enhancing signal quality and accuracy.
- Performed a comprehensive comparison between linear and non-linear structures, such as **CNN** and **RNN**, to evaluate their performance in optimizing the denoising process.

User Status Classification using Facial Tracking **Amherst, MA**

Software Engineer (**Python, Machine Learning, OpenCV**) **Sep 2021 - Dec 2021**

- Employed machine learning models, such as **BERT transformer** (**TensorFlow**), with techniques such as **random forests** and **stratified k-fold**, to accurately classify facial behavior patterns.
- Utilized **OpenCV** libraries to capture and process live camera feed in real-time, extracting relevant features from the eye images, such as pupil dilation and eye movement, to determine user status.