CHANG ZENG

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EDUCATION

UNIVERSITY OF MASSACHUSETTS AMHERST	**Amherst, MA, 2018 - Present**
Pursuing 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**

TECHNICAL SKILL

[a]

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

PROJECT EXPERIENCE

PERSONALIZED PRODUCT SEARCH   **Amherst, MA**

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

- 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 feature 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-space embedding** or **in-context prompting**.

AI ALIGNMENT VIA POWER-MEAN ELICITATION   **Amherst, MA**

Research Assistant (Theory, Optimization, Utility Elicitation)   **Sep 2022 - Present**

- 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.

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 analyze and determine the user's status.