

Ala N. Tak

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Education

University of Southern California

August 2021-December 2026

Ph.D., Computer Science

GPA: 4.0/4.0

University of Southern California

May 2021-May 2024

MSc, Computer Science

GPA: 4.0/4.0

Professional Experience

VISA Inc., Foster City, US

May 2025-August 2025

Staff Machine Learning Scientist Intern

- Developed an Agentic Retrieval-Augmented Generation (RAG) system for Business Intelligence (BI) to support Visa's personalized product management, using LangGraph and LangChain for scalable, modular architecture, and deploying Apache Hadoop and HiveSQL for distributed data processing.
- Explore Model Control Protocol (MCP) techniques to enable fine-grained control over multi-agent workflows and dynamic prompt orchestration

Institute for Creative Technologies (ICT), Los Angeles, US

May 2023- December 2026

Research assistant

- Develop Mechanistic Interpretability techniques to study causality of cognitive processes within language model latent representations using methods such as probes, circuit analysis, logit lens, and activation patching
- Steer LLMs for persona generation, model personalization, and social simulation across model families and scales (e.g., Llama, Phi, Gemma, Mistral, and Olmo 8B up to 70B variants)
- Evaluate LLM alignment against Affect Control Theory in gendered social interactions revealing that models largely ignore context in favor of the actor's identity (Post-tuned Llama3 variants such as Tulu-3 and DeepSeek)
- Explore zero-shot emotional reasoning abilities of LLMs (Gemini2.5, GPT-4, Claude3.7) against humans based on appraisal theory employing Gemini, OpenAI, and Anthropic API
- Investigate impact of LLMs (GPT4, Llama 2, Gemini) on linguistic markers of psychological traits -political affiliation, personality, empathy, and morality
- Test various adapters for transformer architectures to include an understanding of situational appraisal when reasoning about textual emotion expression to enhance models' emotional reasoning deploying Llama 2, RoBERTa, and Mistral
- Hold the 3rd Workshop on Social Influence in Conversations (SICon 2025) at ACL2025 in Vienna
- Initiate a group project to create an empathic dialog model leveraging a mixture of agents and RL with models and methods such as DialoGPT, Llama 3, Mistral, Reinforce, PPO, and TRL

University of Southern California (USC), Los Angeles, US

May 2021-May 2023

Research assistant

- Developed a framework for investigating acceptance of smart home technologies using structural equation modeling on relevant usability constructs utilizing R Studio, Lavaan, and Pandas
- Published "A framework for investigating acceptance of smart home technologies: Findings for residential smart" employing Structural Equation Modeling (SEM), R, SPSS AMOS

University of Tehran R&D Center, Tehran

August 2018-May 2021

Research assistant

- Led five research projects involving more than ten faculty members and 25 graduate student researchers to enhance efficiency in automated construction processes such as robotic crane operations operating on SQL Server and Visual Basic
- Collaborated on a team to develop and implement an innovative construction safety training program leveraging Virtual Reality (VR) and Augmented Reality (AR) technologies utilizing C#, Unity
- Collaborated on developing a UAV path planner considering vehicle dynamics and incorporating Deep Deterministic Policy Gradient implemented on OpenAI Gym environment
- Collaborated on project "Optimized mobile crane path planning in discretized polar space" based on Dijkstra's algorithm [VB, SQL] and "Evaluating lift operations using an interactive VR system on Unity [C#]"

Publications

- [ACL 2025, Mechanistic Interpretability of Emotion Inference in Large Language Models](#)
- [Colm 2025, Impact of LLM Alignment on Impression Formation in Social Interactions](#)
- [IEEE TAFFC 2025, Aware yet Biased: Investigating Emotional Reasoning and Appraisal Bias in LLMs](#)
- [Springer Nature 2025, The shrinking landscape of linguistic diversity in the age of large language models](#)
- [ACII 2024, "GPT-4 Emulates Average-Human Emotional Cognition from a 3rd Person Perspective"](#)
- [arXiv 2024, "Secret Keepers: The Impact of LLMs on Linguistic Markers of Personal Traits"](#)
- [Unmanned Systems 2024, "A Deep Reinforcement Learning Approach for UAV Path Planning Incorporating Vehicle Dynamics with Acceleration Control"](#)
- [ACII 2023: "Is GPT a computational model of emotion?"](#)

Relevant Coursework

- Analysis of Algorithms, Artificial Intelligence, Database Systems, Probability, Programming Systems Design, Natural Language Dialog Systems, Text as Data, Affective Computing

Certificates

- [DeepLearning.AI Deep learning specialization](#)
- [DeepLearning.AI Natural Language Processing specialization](#)
- [DeepLearning.AI Machine Learning Specialization](#)
- [DeepLearning.AI Generative AI with Large Language Models](#)

Technical Skills

- Programming Languages: Python (preferred language), Java, C#, C++, R, SQL, Shell script
- Frameworks / SDKs: PyTorch, TensorFlow, Hugging Face, Keras, Jupyter, scikit-learn, JAX, MySQL, Hadoop, Spark, SPSS, git