

Foad Namjoo

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Summary

Ph.D. researcher specializing in wearable data pipelines, ML and LLM interpretability, with a foundation in high-dimensional geometry and statistical algorithms. Experienced in developing novel methods from near-linear time statistical tests (dKS) to activation steering for LLM control. Independently prototyped and implemented a scalable, secure, end-to-end pipeline for multi-modal wearable sensor data (PPG, accelerometer) from wristbands to the cloud. Eager to apply my skills in integrating research prototypes into production applications and research at Apple.

Skills

Languages: Python, C++, JavaScript, Dart

ML & LLMs: PyTorch (CUDA), Hugging Face (Transformers, Datasets), TensorFlow, scikit-learn, Activation Steering, TransformerLens, Data Curation & Evaluation

Systems & Tools: Docker, Podman, Node.js, MongoDB, REST APIs, CI/CD, Git, Cloud GPUs

Projects & Publications

Graduate Research Assistant | University of Utah

- **LLM Activation Steering with Guardrailed Evaluation | 2025–Present**

Controlled LLM verbosity and tone for mechanistic interpretability by injecting residual-stream activations (layer/ α sweeps) to models like Llama 3.1 and Qwen-2.5. Developed a guardrail evaluation pipeline using LLM judges and JSON schema validation, which stabilized model behavior and measurably reduced hallucinations.

- **dKS — Efficient Multidimensional Two-Sample Testing | 2025**

Extended the Kolmogorov-Smirnov distance between the probability distributions in a multidimensional setting and robust two-sample testing; implemented ε -approximate algorithm with a near-linear run time $O(n \log n)$ in 2D; unit-invariant integral probability metric (IPM) with ε -accurate grid method; stronger tests than unstable mdKS.

Paper: *Efficient and Stable Multidimensional Kolmogorov–Smirnov Distance* — submitted to *SIMODS* [link]

- **MotionPI — Privacy-First Wearable Sensing for Behavior Analytics (Full-Stack) | 2024–Present**

Built an on-device, wearable analytics stack (MotionSense HRV wristbands to app to API to database); streamed PPG/ENMO/Survey with offline-first, schema-validated sync; sustained ~ 7.7 M records/day with 0 malformed writes. Designed an interactive visualization for adjusting activity-trigger thresholds analysis.

Paper: *Designing a Secure Distributed Participant Data Collection System* — *EAI SmartSP 2025* (accepted).

- **Anomaly Detection — Region-Aggregated Spatial Scan Statistics | 2023**

Replaced centroid scans with multi-point region sampling to increase detection power under axis-aligned rectangles; reproducible experiments with a C++ backend.

Paper: *Sampling for Region-Aggregated Spatial Scan Statistics* — under review (double-blind)

Graduate Research Assistant | University of Tehran

- **Computer Vision — High-Dimensional Spectral–Spatial Change Detection | 2022**

Created a dual-stream 3D/2D CNN with SE attention; *accuracy* $> 96\%$, $\kappa > 0.9$, and lower false positive vs. baselines.

Paper: *A Hyperspectral Change Detection Framework Based on Double Stream CNNs Attention Module* [link]

Education

Ph.D., Computer Science | University of Utah | 2023 – Expected 2027

Advisor: Prof. Jeff Phillips | GPA: 3.9/4 | Focus: LLM interpretability; high-dimensional geometric data analysis

Selected Coursework: Machine Learning; Probabilistic ML; Deep Learning; Data Mining.

M.Sc., Algorithms and Computation (Computer Science) | University of Tehran | 2019 – 2022

Thesis: Graph-theoretic modeling of bushfire propagation | GPA: 17.8/20

Selected Coursework: Advanced Algorithms; Approximation Algorithms; Randomized Algorithms; Quantum Algorithms & Computation; Graph Algorithms; Network Science; Internet Algorithms; Distributed Systems

Honors & Awards

Iran M.Sc. University Entrance Exam — Rank 29/20,000 (top 0.15%, 2019) | Top-Talent Scholarship — University of Tehran (2020–2021) | Graduate Fellowship — University of Utah (2023)