Reza (Rey) Sanayei

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Education

M.S. in Computer Science | University of Arizona, GPA: 4.0 Dec 2026
- **Advisors**: Prof. Mihai Surdeanu, Prof. Ellen Riloff — *Focus on NLP, LLMs, Machine Learning*
- **Coursework**: Machine Learning, Neural Networks, NLP, Computer Vision, Information Retrieval, Algorithms, Databases

B.S. in Computer Science (Honors) | University of Arizona, GPA: 3.96 May 2024
- **Honors**: Excellence in Undergraduate Research Award, Galileo Circle Scholar (Top 6 of 1,277), Phi Beta Kappa (Top 5%)

Research Experience

Graduate Research Assistant | University of Arizona, CLU Lab Aug 2023 – Present
- Published 2 first-author papers (EMNLP '25, SemEval '24) on LLM reasoning and hallucination detection
- Designed the first evaluation benchmark for LLMs' non-linear reasoning, leveraging Argumentation Theory semantics [1]
- Proposed ensemble ML methods (PyTorch, Transformers) for hallucination detection in LLM outputs [2]
- Developed authorship-style classifiers for machine-generated text detection [3]

Undergraduate Research Assistant | University of Arizona, Pauli Lab Apr 2023 – Feb 2024
- Engineered HPC pipelines to process terabytes of crop imaging data daily for ML-based phenotyping
- Designed CNNs for panicle detection with robust generalization across diverse crop types

Professional Experience

Machine Learning Engineering Intern | Tucson Loves Music May 2025 – Aug 2025
- Automated ingestion of 1K+ monthly events with Playwright + Docker pipelines, deployed via CI/CD workflows
- Engineered a vision–language model (VLM) pipeline for flyer/poster parsing, reducing manual event data entry by 90%

Machine Learning Engineering Intern | Pido (Fuel Delivery Company) May 2023 – Aug 2023
- Developed RESTful microservices for ingesting and analyzing 15K+ social media posts daily
- Integrated NLP modules (sentiment/location extraction) into production APIs using spaCy and Transformers

Software Engineering Intern | Namava (VOD Service) May 2022 – Aug 2022
- Optimized Java + SQL backend services to support millions of daily requests, reducing response latency by 20%
- Integrated third-party payment APIs, streamlining subscription workflows for 6M+ users

Projects

Retrieval-Augmented Transformers with FAISS *May 2025*
- Implemented FAISS-based attention strategies in GPT-2 to reduce long-context inference costs
- Improved reasoning accuracy on LAMBADA benchmark by 3× with faster CPU inference

Chain-of-Thought Faithfulness in LLMs *Dec 2024*
- Created evaluation framework to measure LLM adherence to reasoning paths under prompt modifications
- Benchmarked reasoning consistency on GSM8K arithmetic tasks in zero-/few-shot settings

Jeopardy! Question-Answering System *Apr 2023*
- Built a QA system over 280K+ Wikipedia docs using Lucene indexing and TF-IDF retrieval
- Applied K-means clustering and supervised SVMs to improve answer accuracy to 70%

Teaching Experience

Head TA (Object-Oriented Programming) | University of Arizona Aug 2021 – May 2024
- Led and mentored 8 TAs in delivering course content to 160+ students per semester
- Designed core programming assignments and oversaw a 5-week capstone group project covering OOP principles

Leadership Experience

President, Google Developer Student Club | University of Arizona Aug 2023 – May 2024
- Revitalized the chapter, organizing ML/NLP-focused events and technical talks with 300+ total participants
- Hosted workshops on LLMs, Hugging Face, and computer vision, fostering AI skill development among peers

Computer Science Ambassador | University of Arizona Jan 2024 – May 2024
- Represented CS department at outreach events, engaging 200+ high school students in discussions on AI and tech careers

Technical Skills

ML & NLP Libraries: PyTorch, Transformers, TRL, TensorFlow, spaCy, NumPy, Pandas, Scikit-learn
Programming: Python, Java, C/C++, SQL, JavaScript, MATLAB, R
Data & Systems: HPC clusters, REST APIs, MySQL, PostgreSQL, MongoDB, AWS, GCP
Tools: Docker, Git/GitHub, GitHub Actions, Linux, Bash, Jupyter Notebook, LaTeX

Publications

1 **Reza Sanayei**, Srdjan Vesic, Eduardo Blanco, Mihai Surdeanu. Can LLMs Judge Debates? Evaluating Non-Linear Reasoning via Argumentation Theory Semantics. In *Findings of the Association for Computational Linguistics: EMNLP 2025*, to appear.

2 **Reza Sanayei**, Abhyuday Singh, MohammadHossein Rezaei, Steven Bethard. MARiA at SemEval 2024 Task-6: Hallucination Detection Through LLMs, MNLI, and Cosine Similarity. In *Proceedings of the 18th International Workshop on Semantic Evaluation (SemEval-2024)*, pp. 1584–1588, Mexico City, Mexico, June 2024.

3 MohammadHossein Rezaei, Yeaeun Kwon, **Reza Sanayei**, Abhyuday Singh, Steven Bethard. CLULAB-UOFA at SemEval-2024 Task 8: Detecting Machine-Generated Text Using Triplet-Loss-Trained Text Similarity and Text Classification. In *Proceedings of the 18th International Workshop on Semantic Evaluation (SemEval-2024)*, pp. 1498–1504, Mexico City, Mexico, June 2024.