

REZA SHIRKAVAND

Department of Computer Science, University of Maryland, College Park, MD, USA

Email, Website, Google Scholar, Github

RESEARCH INTERESTS

Efficient GenAI, Machine Learning

EDUCATION

Sharif University of Technology

2015 - 2020

B.Sc in Computer Engineering

Department of Computer Engineering

University of Pittsburgh

2022 - 2023

M.Sc in Electrical & Computer Engineering

Research Focus: Machine Learning, Computer Vision, Medical Image Analysis

University of Maryland

2023 - Present

Ph.D. in Computer Science

Advisor: Heng Huang

Research Focus: Efficient GenAI, Machine Learning

SELECTED PUBLICATIONS

Efficient Fine-Tuning and Concept Suppression for Pruned Diffusion Models

R. Shirkavand, P. Yu, S. Gao, G. Somepalli, T. Goldstein, H. Huang

CVPR 2025

Not All Prompts Are Made Equal: Prompt-based Pruning of Text-to-Image Diffusion Models

R. Shirkavand*, A. Ganjdanesh*, S. Gao, H. Huang

ICLR 2025

ARGUS: Hallucination and Omission Evaluation in Video-LLMs

R. Rawal, **R. Shirkavand**, H. Huang, G. Somepalli, T. Goldstein

ICCV 2025

ToMoE: Converting Dense Large Language Models to Mixture-of-Experts through Dynamic Structural Pruning

S. Gao, T. Hua, **R. Shirkavand**, C. Lin, et. al

Under Review

Pruning Without Fine-Tuning: Dynamic Pruning of Autoregressive Image Generation Models to Mixtures of Experts

R. Shirkavand, S. Gao, H. Huang

Under Review

Bilevel ZOFO: Bridging Parameter-Efficient and Zeroth-Order Techniques for Efficient LLM Fine-Tuning and Meta-Training

R. Shirkavand*, Q. He, P. Yu, H. Huang

Under Review

From Pixels to Prose: A Large Dataset of Dense Image Captions

*V. Singla, K. Yue, **R. Shirkavand**, S. Paul, et al.*

Preprint

Deep Prompt Tuning for Graph Transformers

***R. Shirkavand**, H. Huang*

Preprint

Incomplete Multimodal Learning for Complex Brain Disorders Prediction

***R. Shirkavand**, L. Zhan, H. Huang, L. Shen, P.M. Thompson*

Preprint

Dementia Severity Classification under Small Sample Size and Weak Supervision

***R. Shirkavand**, S. Ayromlou, S. Farghadani, M. Tahaei, F. Pourakpour, B. Siahlou, Z. Khodakarami, M. Rohban, M. Fatehi, H. Rabiee*

Preprint

WORK EXPERIENCE

PhD Research Intern

Jun 2025 - Present

Roblox

Working on Mixture of Experts for Recommendation and Generation.

ML Researcher/Engineer

Feb 2020 - Dec 2021

Netbina

Developed sentiment analysis models to help crisis management for clients, created topic detection models to identify emerging trends in news articles and tweets related to various industries, built a new multi-class classification model using convolutional neural networks, and implemented object detection models to increase the speed and accuracy of images processing.

TEACHING EXPERIENCE

Co-Instructor, Advanced Machine Learning Topics

Spring 2024

Presented an overview of the transformer architecture and its applications.

Teaching Assistant, Systems & Projects Engineering

Summer 2022

Taught essential topics in systems engineering and project management.

Teaching Assistant, Algorithmic Thinking

Spring 2022

Delivered lectures and supported students in developing the theoretical and practical skills necessary for designing algorithms.

Teaching Assistant, Machine Learning

Fall 2019

Supported students in gaining theoretical and practical knowledge in machine learning and statistical pattern recognition.

Teaching Assistant, Computer Networks

Spring 2019

Facilitated the design and development of network applications and the implementation of conventional network management and routing protocols for students.

Teaching Assistant, Operating Systems

Fall 2018

Guided and supported students in understanding and implementing the central concepts of operating systems through the development of a real, working, and simple kernel.

HONORS AND AWARDS

Nationwide University Entrance Exam - Mathematics

2015

Ranked 14th among 181000 participants

Nationwide University Entrance Exam - Foreign Languages

2015

Ranked 15th among 7000 participants

SKILLS

Programming Languages

Python, Java, C++, Matlab

Libraries

Pytorch, Tensorflow

Languages

English (Fluent) , French (Basic), Persian (Native)