

# REZA SHIRKAVAND

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

Email, Website, Google Scholar, Github

## RESEARCH INTERESTS

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Efficient GenAI, Machine Learning

## EDUCATION

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**Sharif University of Technology**

2020

B.Sc in Computer Engineering

**University of Maryland**

2022 - Present

Ph.D. in Computer Science

Research Focus: Efficient GenAI, Mixture of Experts

## SELECTED PUBLICATIONS

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Cost-Aware Contrastive Routing for LLMs

**R. Shirkavand**, S. Gao, P. Yu, H. Huang

NeurIPS 2025 (Spotlight)

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

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

NeurIPS 2025

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

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

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

Preprint

## WORK EXPERIENCE

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### PhD Research Intern

Jun 2025 - Present

*Roblox*

Working on Mixture of Experts for Recommendation and Generation.

## TEACHING EXPERIENCE

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### 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

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### Nationwide University Entrance Exam - Mathematics

*2015*

Ranked 14th among 181000 participants

### Nationwide University Entrance Exam - Foreign Languages

*2015*

Ranked 15th among 7000 participants

## SKILLS

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### Programming Languages

Python, Java, C++, Matlab

### Libraries

Pytorch, Tensorflow

### Languages

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