

# MOHAMMAD MOHAMMADI

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## EDUCATION

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### University of Toronto

*Sep. 2023 - present*

Ph.D. in Computer Science, advised by [Prof. Igor Gilitschenski](#)

### Sharif University of Technology

*Sep. 2018 - Jun. 2023*

B.Sc. in Computer Engineering

- GPA: 19.36/20 ( $\equiv$  4.0/4), ranked 6<sup>th</sup> out of 136.

### Allame Helli 1 High School

*Sep. 2014 - Jun. 2018*

Diploma in Mathematics and Physics

## RESEARCH INTERESTS

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- Event Camera
- Planning
- Robotics
- Active Agents
- Computer Vision

## PUBLICATIONS

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- **Mohammad Mohammadi**, Daniel Honerkamp, Martin Büchner, Matteo Cassinelli, Fabien Despinoy, Tim Welschhold, Igor Gilitschenski, Abhinav Valada, In submission of IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2025.
- **Mohammad Mohammadi**, Ziyi Wu, Igor Gilitschenski, In submission of Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025.
- **Mohammad Mohammadi\***, Jonathan Nöther\*, Debmalya Mandal, Adish Singla, Goran Radanovic, ***Implicit Poisoning Attacks in Two-Agent Reinforcement Learning: Adversarial Policies for Training-Time Attacks***, International Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), 2023.
- Onur Beker, **Mohammad Mohammadi**, Amir Zamir, ***PALMER: Perception - Action Loop with Memory for Long-Horizon Planning***, Conference on Neural Information Processing Systems (**NeurIPS**), 2022.

## RESEARCH EXPERIENCES

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### [Toronto Intelligent Systems Lab](#), University of Toronto

Toronto, ON, Canada

Ph.D. Research Assistant under the supervision of [Prof. Igor Gilitschenski](#)

*Sep. 2023 - present*

- **Event Camera (Thesis)**

Developing solutions for real-world computer vision and robotics problems using Event Cameras, leveraging their high temporal resolution, high HDR, and low power consumption.

### [Robot Learning Lab](#), Universität Freiburg

Freiburg, Germany

Ph.D. Research Intern under the supervision of [Prof. Abhinav Valada](#)

*Apr. 2024 - present*

- **LLM-Based Planning for Mobile Manipulation**

Enabled robots to reason in complex unseen environments for long-horizon tasks, solving Behavior-1k tasks with primitive actions based on textual descriptions.

### [Visual Intelligence and Learning Lab](#), EPFL

Lausanne, Switzerland

Research Intern under the supervision of [Prof. Amir Zamir](#)

*Jul. 2022 - Nov. 2022*

- **PALMER: Perception-Action Loop with Memory for Long-Horizon Planning**

Collaborated on the development of PALMER, a graph-based planning method designed to address long-horizon tasks in MDPs. The approach was applied to complex environments, such as the Habitat Simulator, to solve navigation and other planning problems.

- **PALMER++: Enhancing Exploration in Large-Scale Environments**

Building on the PALMER framework, we focused on overcoming the limitations of exhaustive search in large and complex environments. We explored new strategies to improve exploration efficiency and generalize the PALMER method to broader scenarios, addressing the challenges of sparse data availability and scalability in long-horizon planning tasks.

**Multi-Agent Systems Group, Max Planck Institute**

Saarbrücken, Germany

Research Intern under the supervision of *Prof. Goran Radanovic*

Jul. 2021 - Aug. 2022

- **Adversarial Poisoning in Multi-Agent MDPs**

Explored adversarial poisoning in multi-agent systems to determine if an attacker controlling one agent can enforce a specific policy on another agent as optimal. Proved the problem's complexity and developed effective approximate and heuristic algorithms, showing strong performance in tabular environments and outperforming baselines. Calculated bounds on the extent of policy changes needed for the attacker's objectives.

**Department of Information Engineering, The Chinese University of Hong Kong** Sha Tin, Hong Kong

Research Intern under the supervision of *Prof. Pascal Vontobel* and *Dr. Gautam Prakriya* Jul. 2020 - Sep. 2020

- **Optimizing Matrix Multiplication in Distributed Systems with Straggling Worker Mitigation**

Tackling straggling workers while using distributed systems to compute the multiplication of two matrices.

- **Efficient Parallel Algorithms for Perfect Matching in Bipartite Graphs**

Developed a parallel algorithm to find and count perfect matchings in graphs, leveraging the NC complexity class.

## TECHNICAL SKILLS

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<b>Programming Languages</b>	Python, Java, C/C++, Verilog, MIPS/8051 Assembly, ARM.
<b>Simulators</b>	Isaac, OmniGibson, Habitat.
<b>Frameworks</b>	PyTorch, PyTorch Lightning, Tensorflow.

## AWARDS AND ACHIEVEMENTS

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- **Ranked in the top 10** out of 136 students of The Class of 2022 for five successive years.
- Awarded the **Silver Medal (overall rank: 7<sup>th</sup>)** at West Asia Regional ACM-ICPC Contest, 2020.
- Awarded the **Silver Medal (overall rank: 20<sup>th</sup>)** at 26<sup>th</sup> Iranian National Olympiad in Informatics, 2016.
- Awarded the **Silver Medal (overall rank: 9<sup>th</sup>)** at 27<sup>th</sup> Iranian National Olympiad in Informatics, 2017.
- **Ranked 76<sup>th</sup>** among 170,000+ students in the Iran National University Entrance Exam (Konkour) for Mathematics and Physics, 2018.

## TEACHING EXPERIENCES

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### Teaching Assistant, University of Toronto

- Introduction to Neural Networks and Deep Learning

Fall 2023

### Teaching Assistant, Sharif University of Technology

- Advanced Programming
- Data Structures and Algorithms
- Linear Algebra
- Artificial Intelligence
- Engineering Probabilities and Statistics
- Design of Algorithms

Fall 2019, Spring 2020

Spring 2020, Spring 2021

Fall 2020

Fall 2020, Fall 2021

Spring 2021

Fall 2021

- Discrete Structures

*Spring 2020*

**Informatics Olympiad Teacher, Allame Helli 1 High School**

*Jul. 2018 - May 2020*

Teaching algorithms and programming, and preparing 10<sup>th</sup> grade students for the Iranian National Olympiad in Informatics.

**LANGUAGES**

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**Persian:** Native

**English:** Proficient (TOEFL: 115/120; R:30,L:30,S:26,W:29)

**German:** Limited Working Proficiency (A2)

**HOBBIES AND INTERESTS**

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Playing the Piano, hiking, traveling and sightseeing, reading books and novels, watching movies, playing Tennis.