Mohammad Zangooei

Ph.D. Candidate - Applied AI Research
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Research and Technical Experience

- **Huawei Cloud R&D** — Canada, Markham
  Research Intern — *May 2026 – Dec. 2026*
  - Proposed judge LLM fine-tuning with counterfactual pairwise augmentation, outperforming model merging.
- **University of Waterloo** — Waterloo, Canada
  Ph.D. Candidate, NSERC/MITACS Intern, Collaborating with Rogers Comm. — *Sept. 2021 – Present*
  - Proposed an evaluation harness for LLM-based heuristic discovery, achieving robust generalization.
  - Proposed formal verification methods for symbolic property checking in deep RL policies.
  - Proposed a resource allocation algorithm with Multi-Agent RL, improving SLA satisfaction by 50%.
  - Proposed a hybrid resource allocation algorithm combining resource reservation and resource sharing, achieving up to 75% resource savings under an optimal bi-level stochastic optimization framework.
- **Nokia Bell Labs** — Paris, France
  Research Intern — *Oct. 2024 – Sept. 2025*
  - Proposed a GNN-based multi-agent RL for connectivity management, improving SLA satisfaction by 40%.
- **TAPSI Co.** — Tehran, Iran
  Data Analyst (Pricing, Mapping, and Dispatch Systems) — *Feb. 2021 – Sept. 2021*
  - Developed large-scale data pipelines (Spark) for analyzing user experience across 25M riders & 1M drivers.
  - Developed A/B testing frameworks to evaluate new product features.

Education

- **University of Waterloo** — Waterloo, Canada
  Direct Ph.D. Student at David Cheriton School of Computer Science — *Sept. 2021 – Present*
  GPA: 95.75/100, ***Research***: Multi-Agent Decision-Making, Verifiable RL, and LLM-Driven Optimization in Systems.
- **Sharif University of Technology** — Tehran, Iran
  Bachelor of Engineering. Major in Electrical Eng and Minor in Computer Science — *Sept. 2016 – Feb. 2021*
  GPA: 18.71/20, ***Honors***: Ranked 15th among 162 students in the batch. Member of the National Elite Foundation.
  Qualification: Ranked 176 among 200,000 participants in Iranian Nationwide University Entrance Exam.

Publications

- **M. Zangooei**, L. Salaün, C. S. Chen, R. Boutaba, "Distributed Coordination for Access-Point Selection in Cell-Free Massive MIMO Using **Graph Neural MARL**" [pdf] — *Under Review*
- **M. Zangooei**, P. Teymoori, M. R. Shirzad, S. Shahtalebi, "Counterfactual Pairwise Augmentation Improves Small Pointwise **LLM Judges**" [pdf] — *NeurIPS Workshop of SLMs for Agentic Systems '26*
- **M. Zangooei**, M. Tahmasbi Arashloo, J. Weil, A. Rizk, R. Boutaba, "Analyzing Symbolic Properties for **DRL Agents** in Systems and Networking" [pdf] — *ACM SIGMETRICS '26*
- **M. Zangooei**, B. Sun, N. Limam, R. Boutaba, "HyRA: A Hybrid Resource Allocation Framework for RAN Slicing based on **Bi-level Stochastic Optimization**" [pdf] — *IEEE NOMS '26*
- **M. Zangooei**, M. Golkari, M. Rouili, N. Saha, R. Boutaba, "Flexible RAN Slicing in Open RAN with **Constrained Multi-agent Reinforcement Learning**" [pdf] — *IEEE Journal on Selected Areas in Communications '24*
- **M. Zangooei**, M. Tahmasbi Arashloo, R. Boutaba, "Towards Verifying Monotonicity and Robustness Properties for Domain-Specific **DRL Agents**" [pdf] — *ICML Workshop on Formal Verification of Machine Learning '23*
- **M. Zangooei**, N. Saha, M. Golkari R. Boutaba, "**Reinforcement Learning** for Radio Resource Management: A Survey" [pdf] — *IEEE Communications Magazine '23*