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Sourena Khanzadeh

Portfolio Website
GitHub: skhanzad
LinkedIn: sourenaK

Work Experience

AI Research Scientist Intern **Jan 24 - Jan 25**
National Research of Canada *Toronto*

- Conducted applied research on knowledge infusion in neural networks, focusing on integrating symbolic reasoning into deep learning models.
- Explored hybrid AI architectures combining structured knowledge bases with transformer-based language models.
- Contributed to internal research initiatives on explainability, robustness, and knowledge representation in AI systems.
- Collaborated with interdisciplinary teams to prototype and evaluate novel approaches for knowledge-enhanced NLP tasks.
- Produced technical reports and research summaries to inform ongoing NRC AI strategy.

Software Engineer Intern **Aug 2022 – Sep 2022**
NTN Company *Toronto*

- Developed and maintained a web-based admin portal using Angular, Node.js, Firebase, and Sass.
- Implemented user authentication and data management by rapidly learning and applying Firebase.
- Delivered a scalable, production-ready internal tool under a tight one-month timeline.
- Demonstrated adaptability and strong problem-solving in a fast-paced development environment.

Education

PhD **Sept 23 - Dec 25**
Toronto Metropolitan University

Main courses: Heuristic Search, Deep Learning, Research Methods in Computer Science, Computer Security and Analysis

Bachelor of Computer Science **Sept 18 - Dec 22**
Toronto Metropolitan University

Main courses: Machine Learning, Artificial Intelligence, Reinforcement Learning, Computer Vision

Skills

Programming	Python, Java, C++, JavaScript, TypeScript, Git, LaTeX, MATLAB
Web & Dev Tools	React, Node.js, Express, MongoDB, REST APIs, Docker, Postman, GitHub
Blockchain	Solidity (basic), IPFS, ERC-721/1155, Polygon, Smart Contract Deployment
Cloud & DevOps	AWS (EC2, S3, Lambda), Firebase, Vercel, Netlify, GitHub Actions, CI/CD Pipelines
Communication	Farsi (native), English (native)

Publications

Research on Blockchain **2023-2024**
Gas Optimization

- S. Khanzadeh, N. Samreen and M. H. Alalfi, "Optimizing Gas Consumption in Ethereum Smart Contracts: Best Practices and Techniques," 2023 IEEE 23rd International Conference on Software Quality, Reliability, and Security Companion (QRS-C), Chiang Mai, Thailand, 2023, pp. 300-309, doi: 10.1109/QRS-C60940.2023.00056. keywords: Codes;Costs;Smart contracts;Virtual machining;Blockchains;Software reliability;Optimization;ethereum;smart contracts;gas optimization,
- S. Khanzadeh and M. H. Alalfi, "SolOSphere: A Framework for Gas Optimization in Solidity Smart Contracts," 2024 IEEE International Conference on Software Analysis, Evolution and Reengineering - Companion (SANER-C), Rovaniemi, Finland, 2024, pp. 35-45, doi: 10.1109/SANER-C62648.2024.00010. keywords: Codes;Smart contracts;Cryptocurrency;Blockchains;Optimization;Open source software;Software development management;Solidity;Smart Contracts;Gas Optimization;Pattern Recognition;Code Transformation,

Research on Deep Learning **2024-2025**
Deep Learning And Reinforcement Learning

- Khanzadeh, S., Neto, E.C.P., Iqbal, S. et al. An exploratory study on domain knowledge infusion in deep learning for automated threat defense. Int. J. Inf. Secur. 24, 71 (2025). https://doi.org/10.1007/s10207-025-00987-4
- Platnick, D., Khanzadeh, S., Sadeghian, A., & Valenzano, R. A. (2024). GANsemble for Small and Imbalanced Data Sets: A Baseline for Synthetic Microplastics Data. arXiv preprint arXiv:2404.07356.
- Khanzadeh, S. (2025). AgentMesh: A Cooperative Multi-Agent Generative AI Framework for Software Development Automation. arXiv preprint arXiv:2507.19902.