Vanshaj Khattar

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Summary

I am a Ph.D. candidate with research experience in reinforcement learning and large language models (LLMs). My research focuses on developing intelligent decision-making agents that are safe, interpretable, and that can continually adapt to non-stationary environments.

Education

Virginia Polytechnic Institute and State University (Virginia Tech) *Blacksburg, VA*
PH.D. ELECTRICAL ENGINEERING *August 2021 - Present*
- Advisor: Dr. Ming Jin
- GPA: 3.64/4.0

Virginia Polytechnic Institute and State University (Virginia Tech) *Blacksburg, VA*
MS ELECTRICAL ENGINEERING *August 2019 - May 2021*
- Advisor: Dr. Azim Eskandarian

Delhi Technological University *New Delhi, India*
B.TECH ELECTRICAL AND ELECTRONICS ENGINEERING *August 2014 - May 2018*
- CGPA: 8.09/10.0

Industry Experience

Mitsubishi Electric Research Labs (MERL) *Cambridge, Boston*
RESEARCH SCIENTIST INTERN IN TRUSTWORTHY AND GENERAL AI *May 2025 - August 2025*
- **Mentors:** Ye Wang, Jing Liu, and Toshiaki Koike-Akino
- **Project:** Investigated the vulnerabilities of the current test-time training methods in large reasoning models (LRMs); developed novel jailbreaks exploiting vulnerabilities and proposed a safe-RL method to mitigate these vulnerabilities.
- **Achievements:** Submitted a conference paper from the internship, currently under review at the AISTATS 2026 conference.

National Renewable Energy Lab (NREL) *Golden, Colorado*
GRADUATE SUMMER INTERN IN ML FOR POWER SYSTEMS *June 2024 - August 2024*
- **Mentors:** Yiyun Yao and Fei Ding
- **Project:** Developed a hierarchical graph-reinforcement learning-based solution for distribution grid critical load restoration under uncertain topology changes.
- **Achievements.** Conference paper accepted at **PES-GM 2025**, and one journal paper under preparation **(Preprint)**

Publications

CONFERENCE AND WORKSHOP PUBLICATIONS

Khattar, V., Yao, Y., Ding, F., Jin, "Distribution Grid Critical Load Restoration under Uncertain Topology Changes via a Hierarchical Multi-Agent Reinforcement Learning Approach". **IEEE PES-GM 2025**

Sel, B., Al-Tawaha, A., **Khattar, V.**, Jia, R. and Jin, M., "Algorithm of thoughts: Enhancing exploration of ideas in large language models". **(ICML 2024)**

Khattar, V.*, Lin, T.*, Huang. Y*, Jia, R., Hong, J., Liu C, Vincentelli, A and Jin, M., "CausalPrompt: Enhancing LLMs with Weakly Supervised Causal Reasoning for Non-Language Applications". **(ICLR 2024 Workshop Paper)**

Khattar, V. and Jin, M., "Optimization Solution Functions as Deterministic Policies for Offline Reinforcement Learning". (American Control Conference) **(ACC 2024)**

Khattar, V. and Jin, M., "Zero-day Attack Detection in Digital Substations using In-Context Learning". **(SmartGridComm 2024)**

Khattar, V., Ding, Y., Sel, B., Lavaei, J. and Jin, M., "A CMDP-within-online framework for Meta-Safe Reinforcement Learning". In The Eleventh International Conference on Learning Representations (**ICLR 2023 Spotlight**) .

Khattar, V. and Jin, M., "Winning the CityLearn challenge: adaptive optimization with evolutionary search under trajectory-based guidance". In Proceedings of the (**AAAI 2023**).

Jin, M., **Khattar, V.**, Kaushik, H., Sel, B. and Jia, R., "On solution functions of optimization: universal approximation and covering number bounds". In Proceedings of the (**AAAI 2023**).

Meimand, M., **Khattar, V.**, Yazdani, Z., Jazizadeh, F., Jin, M., "TUNEOPT: An Evolutionary Reinforcement Learning HVAC System Controller For Tuning Energy-Comfort Optimization Formulations". (**BuildSys 2023**).

Khattar, V. and Eskandarian, A., "Stochastic predictive control for crash avoidance in autonomous vehicles based on stochastic reachable set threat assessment". **(IMECE 2021)**.

Khattar, V. and Eskandarian, A., "Reactive online motion re-planning for crash mitigation in autonomous vehicles using bezier curve optimization". ASME (**IMECE 2020**).

Valluru, S.K., Singh, M., Singh, M. and **Khattar, V.,**, "Experimental validation of PID and LQR control techniques for stabilization of cart inverted pendulum system". In IEEE International Conference on (**RTEICT 2018**).

Journal Publications

Khattar, V. and Eskandarian, A., "Stochastic reachable set threat assessment for autonomous vehicles using trust-based driver behavior prediction". SAE International Journal of Connected and Automated Vehicles. Paper link.

Technical Skills

Programming languages. Python, C, MATLAB, HTML

Frameworks. PyTorch, Tensorflow, cvxpy, NumPy, Pandas, Scikit-learn, Hugging Face, OpenAI Playground

Awards & Scholarships

2023	**AAAI 2023 travel scholarship.**, AAAI	*$ 750*
2022	**Member of the winning team ROLEVT at CityLearn challenge 2021.(ROLEVT team)**,	*$ 1500*
2021	**Second position in 2021 Torgersen Graduate Student Research Excellence Award for MS Oral presentation. (Link)**, Virginia Tech	*$ 500*

Outreach and Service

Conference reviewer: *1)* AISTATS 2022, 2023, 2024, 2025, 2026; *2)* ICLR 2025, 2026; *3)* ICML 2025; *4)* AAAI 2026

Workshops: Organized Trustworthy Interactive Decision-Making with Foundation Models workshop at IJCAI 2024 (Link)

Tutorials: Safe RL for Smart Grids tutorial at SmartGridComm 2024 conference. (Link)

Selected Talks and Presentations

Fall, 2024. *Tu*. PEC Conference at Virginia Tech. Spring, 2023. *Offline Actor-Critic with Optimization Policies for Demand Response and Urban Energy Management*. PEC Conference at Virginia Tech.

Fall, 2022. *Trustworthy Reinforcement Learning.* Presented to 150+ undergraduates in the undergraduate engineering research seminar, Fall 2022

Fall 2021. *Zeroth-Order Implicit Reinforcement Learning for Distributed Control Systems*. Southeast Control Conference 2021, Virginia Tech.

Web features

Fall, 2023. *Featured as a Spotlight at Sanghani Center for Artificial Intelligence and Data Analytics, Virginia Tech. (Link)*