

Ayush Jain

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EDUCATION

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|---|-----------------------------------|
| University of Southern California PhD in Computer Science (Joseph J Lim & Erdem Bıyık), GPA: 4.0/4.0 | Aug 2018 - Dec 2024 (expected) |
| University of Southern California MS in Computer Science, GPA: 4.0/4.0 | May 2024 |
| Indian Institute of Technology Delhi B.Tech in Electrical Engineering, GPA: 8.991/10 | July 2012 - June 2016 |

RESEARCH INTEREST & EXPERIENCE: AGENTS

PhD Thesis: My goal is to build *adaptive agents* in both physical and virtual worlds. My work enables agents to learn under **complex action spaces** that are *large, unseen, varying, or difficult to optimize*.

Topics: Reinforcement Learning, Instruction-following Agents, Post-training Foundation Models.

Trained Agents for: Android Devices, Recommendation System, Minecraft, Robotics, Tool-Use.

PUBLICATIONS

[NeurIPS 2024 submission] G. Zhang*, **A. Jain***, I. Hwang, S. Sun, J. Lim. “Every Policy has Something to Share: **Efficient Multi-Task Reinforcement Learning** via Selective Behavior Sharing” [[Paper](#)]

[NeurIPS 2024 submission] **A. Jain**, N. Kosaka, X. Li, K. Kim, E. Bıyık, J. Lim. “**Improving Actor-Critic** by Simplifying Q-Landscape .”

[ICLR 2022] **A. Jain***, N. Kosaka*, K. Kim, J. Lim. “Know Your Action Set: **Learning Action Relations** for Reinforcement Learning”. *International Conference on Learning Representations*. [[Paper](#)]

[ICML 2020] **A. Jain***, A. Szot*, and J. Lim. “**Generalization to New Actions** in Reinforcement Learning”. *International Conference on Machine Learning*. [[Paper](#) | [Talk](#) | [Environment](#)]

A. Jain, V. Singh, S. Ranjan, R. Rajkumar, S. Agarwal. “Uniform Information Density Effects on Syntactic Choice in Hindi”. *Workshop on Linguistic Complexity and NLP*, COLING 2018. [[Paper](#)]

A. Jain, V. Singh, S. Agarwal, and R. Rajkumar. “Uniform Information Density models for language production”. *39th Annual Conference of the German Linguistic Society*, DGfS 2017. [[Abstract](#) | [Slides](#)]

INDUSTRY EXPERIENCE

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| Meta Reality Labs Research, Redmond, USA <i>Research Intern</i> with Nitin Kamra → Reinforcement learning based virtual agents for instruction-following in Android devices. | May 2024 – Present |
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| Microsoft Research, Montreal, Canada <i>Research Intern</i> with Eric Yuan, Marc-Alexandre Côté → Combine discrete prompt optimization in large language models (LLM) with gradient-optimization in neural networks for natural-language reasoning tasks and instruction-following Minecraft agents. | May 2023 – Jan 2024 |
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Naver AI Research, Seoul, South Korea (remote) May 2022 - Aug 2022
Research Intern with Kyung-Min Kim (Naver CLOVA), Joseph J Lim June 2021 – Dec 2021
→ Reinforcement Learning in **recommender systems** for large and varying action spaces, like streaming news recommendations, using graph attention networks to address varying listwise slate-actions.

Samsung Research, Seoul, South Korea Sep 2016 – June 2018
Engineer at Data Analytics Lab with James Geraci, Yunsu Lee
→ Market share prediction and data unification for various Samsung appliances using time series models.
→ Failure prediction with time-series anomaly detection and information extraction from text modeling.

Samsung Electronics, Suwon, South Korea May 2015 – July 2015
Software Engineer Intern with Sungmok Seo
→ Design of smart thermostat algorithm that learns and adapts to user schedules.

PATENT

J. Lee, M. Kim, **A. Jain**, T. Hwang, J. Kim, H. Cho. “Method and Apparatus for Managing Operation Data of Appliance for Failure Prediction”. U.S. Patent No. 11,182,235. 23 Nov. 2021.

ACHIEVEMENTS

- Director’s award for being in the top 7% of IIT Delhi for three semesters (2013-14).
- All India Rank of 198 in IITJEE taken by over half a million students (2012).
- All India Rank of 91 in AIEEE taken by over a million students (2012).
- Central Board of Secondary Education Merit Certificate for securing India top 0.1% (2012).
- KVPY Fellowship Award and National Talent Search Examination (NTSE) Scholarship Award.
- All India Rank of 3 in National Science Talent Search Examination, NSTSE (2011).
- India Top 1% in National Standard Examinations (2011) in Physics, Chemistry, and Astronomy.
- India Top 30 in Indian National Astronomy Olympiad (2012).

TEACHING

Teaching Assistant, CSCI-566, USC Fa19, S19, Fa20, Sp23, Sp24, Fa24
Deep Learning and its Applications, USC (Joseph J Lim, Jesse Thomason, Yue Zhao, Yan Liu).

REVIEWER SERVICES

- **ICLR**: 2023, 2024, 2025
- **NeurIPS**: 2023, 2024
- **CoRL**: 2021, 2022, 2023, 2024