

Ishika Singh

RESEARCH SCIENTIST • NVIDIA

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Education

University of Southern California

PHD IN COMPUTER SCIENCE

Los Angeles, CA

2021 - May 2026

Advisor: Prof. Jesse Thomason

Research Interests: Vision language action models, embodied AI, language and 3D perception for robotic manipulation, imitation learning, multi-agent task planning, robot learning.

Indian Institute of Technology (IIT) Kanpur

B.TECH, DOUBLE MAJOR IN COMPUTER SCIENCE AND CHEMICAL ENGINEERING

India

2016 - 2021

Awards

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| 2025 | RSS Pioneer , 33 selected (14.6% acceptance) top early-career robotics researchers worldwide | Global |
| 2024 | Qualcomm Innovation Fellowship finalist , US-wide fellowship program for PhD studnets | USA |
| 2021 | USC Graduate Fellowship , for 1 year of the Ph.D. program | USA |
| 2020 | Adobe India Women in Technology Scholarship , 5 undergrad/masters awardees nation-wide | India |
| 2019-20 | Academic Excellence Award , for both majors, given to top 10% students in the department | India |

Experience

NVIDIA Cosmos Lab | RESEARCH SCIENTIST

Jul'26 - Present | Santa Clara, CA

Research topic(s): World action models, robot learning, RL, multimodal pretraining, and policy evaluation.

Amazon Frontier AI and Robotics | APPLIED SCIENTIST INTERN

May'25 - Jan'26 | SF, CA

Research topic(s): Robot foundation models, learning from egocentric human videos.

GLAMOR Lab, USC | GRADUATE RESEARCH ASSISTANT | PI: PROF. JESSE THOMASON

Aug'21 - May'26 | LA, CA

Research topic(s): Multi-agent collaborative hierarchical planning, generative data augmentation for robot learning, 3D representation learning for robotics, data cartography, vision and language navigation.

NVIDIA Seattle Robotics Lab | RESEARCH INTERN

May'24 - May'25 | Seattle, WA

Research topic(s): Vision-Language Action models, 3D perception based robot instruction following using LLMs and VLMs.

NVIDIA Seattle Robotics Lab | RESEARCH INTERN

May - Sept'22 | Seattle, WA

Research topic(s): Long-horizon robot task planning using LLMs

Exploration Lab, IIT Kanpur | PI: PROF. ASHUTOSH MODI

Jan'20 - Jul'21 | India

Research topic(s): Text-based games, RL, affective language modeling, text generation

Big Data Labs, Adobe Research | RESEARCH INTERN

Apr - July'20 | India

Research topic(s): Information retrieval, natural language reasoning

Publications

*equal contribution

Colosseum V2: Benchmarking Generalization for Vision Language Action Models

RA-L 2026

JEREMY MORGAN, PRAJWAL VIJAY, HYEONHO OH, JINCEN SONG, ASHVIN ARORA, ALINA DU, GAURAV S.

SUKHATME, JESSE THOMASON, **ISHIKA SINGH**

[arXiv | website]

IEEE Robotics and Automation Letters 2026

OG-VLA: 3D-Aware Vision Language Action Model via Orthographic Image Generation

IROS 2026

ISHIKA SINGH, ANKIT GOYAL, STAN BIRCHFIELD, DIETER FOX, ANIMESH GARG, VALTS BLUKIS

[arXiv | website]

IEEE/RSJ International Conference on Intelligent Robots and Systems 2026

PSALM-V: Automating Symbolic Planning in Interactive Visual Environments with Large Language Models

ICRA 2026

WANG BILL ZHU, MIAOSEN CHAI, **ISHIKA SINGH**, ROBIN JIA, JESSE THOMASON
IEEE International Conference on Robotics and Automation 2026

[arXiv]

Adapting Large Pre-Trained Models for Generalized Robot Reasoning and Control

RSS Pioneer 2025

ISHIKA SINGH

[pdf]

Robotics: Science and Systems-Pioneers Workshop 2025

Language Models can Infer Action Semantics for Classical Planners from Environment Feedback

NAACL 2025

WANG ZHU, **ISHIKA SINGH**, ROBIN JIA, AND JESSE THOMASON

[arXiv]

Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics 2025

THE COLOSSEUM: A Benchmark for Evaluating Generalization for Robotic Manipulation

RSS 2024

WILBERT PUMACAY*, **ISHIKA SINGH***, JIAFEI DUAN*, RANJAY KRISHNA, JESSE THOMASON, DIETER FOX

[arXiv] [website]

Robotics: Science and Systems 2024

ProgPrompt: Generating Situated Robot Task Plans using Large Language Models

ICRA 2023, AuRo 2023

ISHIKA SINGH, VALTS BLUKIS, ARSALAN MOUSAVIAN, ANKIT GOYAL, DANFEI XU, JONATHAN TREMBLAY, DIETER FOX, JESSE THOMASON, ANIMESH GARG

[arXiv] [website] [SciAm] [CACM]

IEEE International Conference on Robotics and Automation 2023

Invited journal paper in *Autonomous Robots 2023 - Special Issue: Large Language Models in Robotics*

Pre-trained Language Models as Prior Knowledge for Playing Text-based Games

AAMAS 2022

ISHIKA SINGH, GARGI SINGH, ASHUTOSH MODI

[arXiv] [code]

International Conference on Autonomous Agents and Multiagent Systems 2022: Extended Abstract

Adapting a Language Model for Controlled Affective Text Generation

COLING 2020

ISHIKA SINGH*, AHSAN BARKATI*, TUSHAR GOSWAMY, ASHUTOSH MODI

[arXiv] [talk] [code]

International Conference on Computational Linguistics 2020 (Long Paper, Oral)

Also in *Wordplay: When Language Meets Games workshop @ NeurIPS 2020*

Workshop Papers

TwoStep: Multi-agent Task Planning using Classical Planners and Large Language Models

TAMP@ICRA'25

DAVID BAI*, **ISHIKA SINGH***, DAVID TRAUM, AND JESSE THOMASON

[arXiv]

Task and Motion Planning Workshop @ ICRA 2025

Self-Supervised 3D Representation Learning for Robotics

PT4R-ICRA'23

ISHIKA SINGH, ANTHONY LIANG, MOHIT SHRIDHAR, JESSE THOMASON

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Pretraining4Robotics Workshop @ ICRA 2023

Noisy Instructions Are All You Need for VLN Pretraining

O-DRUM - CVPR'23

WANG ZHU, **ISHIKA SINGH***, YUAN HUANG*, ROBIN JIA, JESSE THOMASON

[arXiv]

Open-Domain Reasoning Under Multi-Modal Settings workshop @ CVPR 2023

Transformer Adapters for Robot Learning

PRL-CoRL'22

ANTHONY LIANG, **ISHIKA SINGH**, KARL PERTSCH, JESSE THOMASON

[pdf]

Pretraining for Robot Learning workshop @ CoRL 2022

Differentially-private Federated Neural Architecture Search

FL-ICML'20

ISHIKA SINGH*, HAoyi ZHOU*, KUNLIN YANG, MENG DING, BILL LIN, PENGTAO XIE

[arXiv] [code]

Federated Learning for User Privacy & Data Confidentiality workshop @ ICML 2020 (Long Presentation)

Patents

Prompt Generator for Use with One or More Machine Learning Processes

US Patent 2024

ISHIKA SINGH, ARSALAN MOUSAVIAN, ANKIT GOYAL, DANFEI XU, JONATHAN TREMBLAY, DIETER FOX, ANIMESH GARG, VALTS BLUKIS

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US Patent No. 2024/0095077 | NVIDIA Research

Machine-Learning Techniques for Augmenting Electronic Documents with Data-Verification Indicators

US Patent 2022

NAVITA GOYAL, VIPUL SHANKHPAL, PRIYANSHU GUPTA, **ISHIKA SINGH**, BALDIP BIJLANI, ANANDHAVELU N

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US Patent No. 2022/0171935 | Adobe Research

Academic Service

- Co-organizing From Data to Decisions: VLA Pipelines for Real Robots, ICRA 2026.
- Serving as Program Committee Chair, RSS Pioneers 2026.
- Co-organizing Workshop on Semantic Reasoning for Robotics, RSS'25.
- Co-organizing Workshop on 3D Vision Language Models (VLMs) for Robotics, CVPR'25.
- Published a blog on 'Language Models meet Classical Planners to make smarter Robot Task Plans' as part of blog of Robotics and Autonomous Systems Center at USC.
- Teaching Assistant for graduate course: CSCI-699, Robot Learning with Prof. Erdem Biyik in Fall'24.
- Co-organizing the 3rd Workshop on Language and Robot Learning, CoRL'24.
- Reviewer for conference papers: EMNLP'23, Humanoid'23, ICRA'24, RA-L'23, UR'24, RA-L'24, IROS'24, CoRL'24, ICLR'24, AuRo'24, RA-L'25, RA-L'26, ICRA'26.
- Reviewer for workshop proposals: RO-MAN'24.
- Guest lecture in undergraduate course: CSCI-499 Natural Language Processing for Interactive AI in Fall'22.
- Mentored 4 BS/MS student for research projects in GLAMOR lab, on vision-language robot navigation in simulation and real-world, data cartography for sequential decision-making tasks, robot learning, and multi-agent planning.
- Co-organized vision-and-dialogue TEAch TATC Challenge at the Embodied AI Workshop, CVPR'22 and CVPR'23.
- Presented project demos at Robotics Open House 2023 and 2024, hosted by USC Viterbi K-12 STEM Center.
- Student volunteer for: virtual organization of ICLR'20, ICML'20, etc.