

Ishika Singh

PH.D. STUDENT · COMPUTER SCIENCE · USC

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Education

University of Southern California

PHD IN COMPUTER SCIENCE

Advisor: Prof. Jesse Thomason

Coursework: Robotics, Grounding Natural Language, Data-Centric NLP, Advanced Computer Vision, Robot Learning

Los Angeles, CA

2021-present

Indian Institute of Technology (IIT) Kanpur

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

India

2016 - 2021

Publications

Research Interests: language and 3D perception for robotic manipulation, imitation learning, multi-agent task planning, embodied AI, robot learning, vision and language navigation

Self-Supervised 3D Representation Learning for Robotics

ISHIKA SINGH, ANTHONY LIANG, MOHIT SHRIDHAR, JESSE THOMASON

Pretraining4Robotics Workshop @ ICRA 2023

PT4R-ICRA'23

Noisy Instructions Are All You Need for VLN Pretraining

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

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

O-DRUM - CVPR'23

Transformer Adapters for Robot Learning

ANTHONY LIANG, ISHIKA SINGH, KARL PERTSCH, JESSE THOMASON

Pretraining for Robot Learning workshop @ CoRL 2022

PRL-CoRL'22

[pdf]

ProgPrompt: Generating Situated Robot Task Plans using Large Language Models

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

IEEE International Conference on Robotics and Automation (ICRA) 2023

Also in LaReL workshop @ NeurIPS 2022; LangRob workshop @ CoRL 2022

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

ICRA'23

[arXiv | website]

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

ISHIKA SINGH, GARGI SINGH, ASHUTOSH MODI

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

AAMAS'22

[arXiv | code]

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

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

US Patent No. 2022/0171935 | Adobe Research

US Patent 2022

[pdf]

Adapting a Language Model for Controlled Affective Text Generation

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

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

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

COLING'20

[arXiv | talk | code]

Differentially-private Federated Neural Architecture Search

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

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

FL-ICML'20

[arXiv | code]

Experience

GLAMOR Lab, USC | PI: PROF. JESSE THOMASON

Aug'21 - Present | LA, CA

Research topic(s): Vision and language navigation, Multi-agent collaborative hierarchical planning, Generative data augmentation for robot learning, Data Cartography.

Simulators worked with: AI2THOR, Habitat, RLBench, VirtualHome, Matterport 3D Simulator (topological and Habitat-based continuous)

NVIDIA Seattle Robotics Lab | RESEARCH INTERN W/ DR. VALTS BLUKIS AND PROF. ANIMESH GARG

May - Aug'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

UC San Diego | PI: PROF. PENGTAO XIE

Jan - May'20 | Remote

Research topic(s): Differential Privacy, Theoretical ML, Federated Neural Architecture Search, Optimization

Awards

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

2019 **Grand Prize**, worth 6,800 USD, Deloitte TechnoUtsav2.0 AI competition, **1st** in 9.5K+ contestants

India

Academic Service

- Reviewer for: EMNLP'23, Humanoid'23, ICRA'24, RA-L'23
- Mentored 3 BS/MS student for research projects in GLAMOR lab, on vision-language robot navigation in simulation and real-world, and data cartography for sequential decision-making tasks.
- Co-organized vision-and-dialogue TEACH TATC Challenge at Embodied AI Workshop, CVPR'22.
- Student volunteer for: virtual organization of ICLR'20, ICML'20, etc.