

# Shantanu Jaiswal

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## EDUCATION

<b>Carnegie Mellon University (CMU)</b> <i>Master of Science in Robotics (Research); Advisor: Deepak Pathak</i> • <b>GPA:</b> 4.17/4.0	Pittsburgh, USA <i>Aug 2024 – Present</i>
<b>Nanyang Technological University (NTU Singapore)</b> <i>Bachelor of Engineering in Computer Engineering, Specialization in Intelligent Systems</i> • <b>GPA:</b> 4.64/5.00 (Honours highest distinction)	Singapore <i>Aug 2014 – Jun 2018</i>

## RESEARCH INTERESTS

Compositional and Long-Context Reasoning; Multimodal Generative Modeling; Embodied and Agentic AI

## PUBLICATIONS

### Conference papers

- [1] **Shantanu Jaiswal**, Mihir Prabhudesai, Nikash Bhardwaj, Zheyang Qin, Amir Zadeh, Chuan Li, Katerina Fragkiadaki, and Deepak Pathak. “Iterative Refinement Improves Compositional Image Generation”. In: *Under review at CVPR 2026*. [\[Preprint\]](#) [\[Code \(soon\)\]](#).
- [2] **Shantanu Jaiswal**, Debaditya Roy, Basura Fernando, and Cheston Tan. “Learning to Reason Iteratively and Parallelly for Complex Visual Reasoning Scenarios”. In: *Conference on Neural Information Processing Systems (NeurIPS) 2024*. [\[Paper\]](#) [\[Code\]](#).
- [3] **Shantanu Jaiswal**, Basura Fernando, and Cheston Tan. “TDAM: Top-Down Attention Module for Contextually-Guided Feature Selection in CNNs”. In: *European Conference on Computer Vision (ECCV) 2022*. [\[Paper\]](#) [\[Suppl.\]](#) [\[Code\]](#).
- [4] Haoran Huan, Mihir Prabhudesai, Mengning Wu, **Shantanu Jaiswal**, and Deepak Pathak. “Can LLMs Lie? Investigation Beyond Hallucination”. In: *arXiv preprint arXiv:2509.03518* (2025). [\[Paper\]](#) [\[Code\]](#).
- [5] Ishaan Rawal, Alexander Matyasko, **Shantanu Jaiswal**, Basura Fernando, and Cheston Tan. “Dissecting Multimodality in VideoQA Transformer Models by Impairing Modality Fusion”. In: *International Conference on Machine Learning (ICML) 2024*. [\[Paper\]](#) [\[Code\]](#).
- [6] **Shantanu Jaiswal**, Dongkyu Choi, and Basura Fernando. “What do CNNs gain by imitating the visual development of primate infants?” In: *31st British Machine Vision Conference (BMVC) 2020*. [\[Paper\]](#) [\[Suppl.\(zip\)\]](#) [\[Code\]](#) [\[Abstract \(Cogsci 2020\)\]](#).

### Other workshop/symposium/tiny-track papers and technical reports

- [7] Aishik Nagar, **Shantanu Jaiswal**, and Cheston Tan. “Dissecting Zero-Shot Visual Reasoning Capabilities in Vision and Language Models”. In: *The Second Tiny Papers Track at ICLR 2024 (Notable)*. [\[Paper\]](#).
- [8] Cheston Tan\* and **Shantanu Jaiswal**\* (equal contribution). “The Path to AGI Goes through Embodiment”. In: *Proceedings of the AAAI Symposium Series. Vol. 1. No. 1. 2023*. [\[Paper\]](#).
- [9] Ishaan Rawal, **Shantanu Jaiswal**, Basura Fernando, and Cheston Tan. “Are VideoQA models truly multimodal?” In: *NeurIPS 2023 XAI in Action Workshop*. [\[Paper\]](#).
- [10] **Shantanu Jaiswal**, Liu Yan, Dongkyu Choi, and Kenneth Kwok. “A Probabilistic-Logic based Commonsense Representation Framework for Modelling Inferences with Multiple Antecedents and Varying Likelihoods”. In: *arXiv 2022*. [\[Tech. Report\]](#).
- [11] Annamalai Narayanan, Mahinthan Chandramohan, Rajasekar Venkatesan, Lihui Chen, Yang Liu, and **Shantanu Jaiswal**. “graph2vec: Learning Distributed Representations of Graphs”. In: *Proceedings of the 13th International Workshop on Mining and Learning with Graphs (MLG) 2017*. [\[Paper\]](#) [\[Code\]](#).

## RESEARCH EXPERIENCE

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### Graduate Research Assistant – CMU Robotics Institute

Nov 2024 – Present

Pittsburgh, USA

Advisors: Prof. Deepak Pathak

- Investigating reinforcement-learning methods to improve coding and reasoning abilities for long-context tasks.
- Co-designed an inference-time iterative refinement method to improve compositional image generation abilities of state-of-art text-to-image models (paper: [1])
- Contributed to mechanistic interpretability techniques analyzing lying behavior and deception capabilities of LLMs (paper: [4]).

### Senior Research Engineer I – A\*STAR Center for Frontier AI Research

Jan 2019 – July 2024

Advisors: Dr. Cheston Tan and Dr. Basura Fernando; Topic: Cognitively-inspired computer vision

Singapore

- Investigated design of more effective architectural formulations and training approaches for scene understanding and reasoning tasks (related papers: [2], [3], [6]).
- Contributed to probing techniques and benchmarking studies for vision-language models to systematically examine their reasoning capabilities and analyze potential multimodal biases (related papers: [5], [7], [9]).

### Undergraduate Research Assistant – NTU School of EEE

Sep 2016 – Aug 2017

Advisor: Dr. Lihui Chen; Topic: Deep learning for graph representation learning

Singapore

- Implemented deep learning approaches for graph representation learning and aspect-based sentiment analysis.
- Contributed to development of the *graph2vec* framework and evaluation of baseline graph representation learning approaches (related paper: [11]).

## SCHOLARSHIPS, AWARDS AND HONOURS

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Graduate Research Funding (full tuition coverage and stipend), CMU Robotics Institute	2025
NeurIPS Scholar Award (accommodation and registration grant)	2024
President's Research Scholar, Nanyang Technological University	2017
Ideasinc Collab4Good Seed Fund (declined), Nanyang Technopreneurship Center	2016
Most Innovative Prize, NTU Hackathon on Digital Economy and Services	2016
Ministry of Education (MOE) Tuition Grant (merit-based; international student category), Govt. of Singapore	2014
Scholarship for Higher Education (SHE-INSPIRE) for meritorious academic performance (top 1%ile overall; perfect marks in Math and Computer Science, Indian School Certificate Board Exams), Govt. of India	2014

## SELECTED COURSEWORK

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**CMU:** Computer Vision (A+); Visual Learning and Recognition (A); Robot Learning (A+); Math Fund for Robotics (A)  
**NTU:** Machine Learning (A+); Information Retrieval (A+); Neural Networks (A); Living with Mathematics (A+); Math in Real World Applications (A); Engineering Mathematics (A+); Discrete Mathematics (A); Data Structures (A+)

## TECHNICAL SKILLS AND LANGUAGES

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**Programming languages:** Python, C, Java, Matlab, Prolog

**Select frameworks:** PyTorch, TensorFlow, Needle, ProbLog, Scikit-learn, CoreNLP, Networkx, Pandas, Git, MTurk  
**Languages:** English (native), Hindi

## ORGANIZATIONS AND ACTIVITIES

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Reviewer for NeurIPS (Main and Datasets track) 2023, 2024; ICLR 2024-26; CVPR 2024-26; ICML 2024	-
Hall Soccer Team Member (trained towards professional soccer in 2nd university year), NTU	Aug 2015 – Dec 2017
Press and Publicity Director, NTU Astronomical Society	Aug 2015 – May 2016
High-school Computer Science Teacher, Shri Ram School Aravali	June 2014 - July 2014
Varsity Soccer (U-17 ASISC North West Regional 2011 winning team), Shri Ram School	Aug 2009 – July 2013
Indian team (3 members) at Pacific Astronomy Summit, Hawaii Space Grant Consortium	Jan 2013 – July 2013