

# Ankit Goyal

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📄 [scholar.google.com/citations?user=RhN6jKIAAAAJ&hl=en&oi=ao](https://scholar.google.com/citations?user=RhN6jKIAAAAJ&hl=en&oi=ao)

## Work Experience

- Aug'22–Now **Research Scientist, NVIDIA Robotics Research Lab.**  
Mentor: Prof. Dieter Fox, Dr. Fabio Ramos
- Sep'18–Aug'22 **Graduate Student Research Assistant, Princeton University.**  
Mentor: Prof. Jia Deng
- Jun'21–Nov'21 **Research Intern, NVIDIA Robotics Research Lab.**  
Mentor: Prof. Dieter Fox
- Dec'20–May'21 **Research Intern, Intel Intelligent Systems Lab.**  
Mentor: Dr. Vladlen Koltun
- Sep'16–Aug'18 **Graduate Student Research Assistant, University of Michigan.**  
Mentor: Prof. Jia Deng
- May'16–July'16 **Research Intern, Microsoft Research (MSR).**  
Mentor: Dr. Prateek Jain
- May'15–July'15 **Research Intern, University of Southern California (USC).**  
Mentor: Prof. Shrikanth S. Narayanan
- May'14–Apr'15 **Research Assistant, IIT Kanpur.**  
Mentor: Prof. Nischal Verma

## Education

- 2018–22 **Ph.D. in Computer Science, Princeton University.**  
Advisor: Prof. Jia Deng  
Thesis: Towards Geometric Intelligence: Seeing, Grounding and Reasoning over Geometries
- 2016–18 **M.S. in Computer Science and Engineering, University of Michigan.**  
GPA: 3.97/4.0, Track: Artificial Intelligence  
A+ (outstanding grade above A) in 2/6 courses
- 2012–16 **B.Tech. in Electrical Engineering, Indian Institute of Technology (IIT) Kanpur.**  
CPI: 9.8/10.0, Minor: Computer Science  
Rank 2/150 students | A\* (outstanding grade above A) in 10/45 courses

## Awards and Recognition

- 2023 **RSS Pioneers Award, Cohort of 30 most promising early-career robotics researchers in the world.**
- 2022 **NeurIPS Scholar Award.**
- 2021 **Qualcomm Innovation Fellowship, \$100k research grant, acceptance rate 15%.**
- 2021 **Outstanding Reviewer, ICCV, Top 5% of all reviewers.**
- 2016 **Sridhar Memorial Prize, IIT Kanpur, Best student in Electrical Engineering.**
- 2015 **Viterbi-India Scholarship, USC and Indo-US Science and Technology Forum (IUSSTF).**
- 2013-2015 **Academic Excellence Award, IIT Kanpur, Awarded thrice for academic performance.**

## Publications

- 2024 **Discovering Robotic Interaction Modes with Discrete Representation Learning.**  
L Wang, **A Goyal**, H Xu, A Garg  
*Conference on Robot Learning (CoRL),*
- 2024 **RVT-2: Learning Precise Manipulation from Few Examples.**  
**A Goyal**, V Blukis, J Xu, Y Guo, YW Chao, D Fox  
*Robotics: Science and Systems (RSS),*  
Also, in DGR@RSS-2024 and GAS@RSS-2024

- 2023 **RVT: Robotic View Transformer for 3D Object Manipulation.**  
**A Goyal**, J Xu, Y Guo, V Blukis, YW Chao, D Fox  
*Conference on Robot Learning (CoRL)*, **Oral (Top 6.6% of submitted papers)**  
 Also in NeuRL-RMW@CoRL-2023
- 2023 **Shelving, Stacking, Hanging: Relational Pose Diffusion for Multi-modal Rearrangement.**  
 A Simeonov, **A Goyal**, L Manuelli, L Yen-Chen, A Sarmiento, A Rodriguez, P Agrawal, D Fox  
*Conference on Robot Learning (CoRL)*
- 2023 **Infinite Photorealistic Worlds using Procedural Generation.**  
 A Raistrick, L Lipson, Z Ma, L Mei, M Wang, Y Zuo, K Kayan, H Wen, B Han, Y Wang, A Newell, H Law, **A Goyal**, K Yang, J Deng  
*Conference on Computer Vision and Pattern Recognition (CVPR)*
- 2023 **ProgPrompt: Generating Situated Robot Task Plans using Large Language Models.**  
 I Singh, V Blukis, A Mousavian, **A Goyal**, D Xu, J Tremblay, D Fox, J Thomason, A Garg  
*International Conference on Robotics and Automation (ICRA)*  
 Also, in Autonomous Robots, LaRel@NeurIPS-2022 and LangRob@CoRL-2022
- 2022 **Non-Deep Networks.**  
**A Goyal**, A Bochkovskiy, J Deng, V Koltun  
*Neural Information Processing Systems (NeurIPS)*
- 2022 **IFOR: Iterative Flow Minimization for Robotic Object Rearrangement.**  
**A Goyal**, A Mousavian, C Paxton, Y W Chao, B Okorn, J Deng, D Fox  
*Conference on Computer Vision and Pattern Recognition (CVPR)*
- 2022 **Coupled Iterative Refinement for 6D Multi-Object Pose Estimation.**  
 L Lipson, Z Teed, **A Goyal**, J Deng  
*Conference on Computer Vision and Pattern Recognition (CVPR)*
- 2021 **Revisiting Point Cloud Classification with a Simple and Effective Baseline.**  
**A Goyal**, H Law, B Liu, A Newell, J Deng  
*International Conference on Machine Learning (ICML)*
- 2020 **Rel3D: A Minimally Contrastive Benchmark for Grounding Spatial Relations in 3D.**  
**A Goyal**, K Yang, D Yang, J Deng  
*Neural Information Processing Systems (NeurIPS)*, **Spotlight (Top 4% of submitted papers)**
- 2020 **PackIt: A Virtual Environment for Geometric Planning.**  
**A Goyal**, J Deng  
*International Conference in Machine Learning (ICML)*
- 2019 **Semantic Relation Detection Between Construction Entities To Support Safe Human-Robot Collaboration in Construction.**  
 D Kim, **A Goyal**, A Newell, S Lee, J Deng, V Kamat  
*ASCE International Conference on Computing in Civil Engineering (i3CE)*
- 2018 **Think Visually: Question Answering through Virtual Imagery.**  
**A Goyal**, J Wang, J Deng  
*Annual Meeting of the Association of Computational Linguistics (ACL)*
- 2017 **ProtoNN: Compressed and Accurate kNN for Resource-scarce Devices.**  
 C Gupta, AS Suggala, **A Goyal**, HV Simhadri, B Paranjape, A Kumar, S Goyal, R Udupa, M Varma, P Jain  
*International Conference in Machine Learning (ICML)*
- 2016 **A Multimodal Mixture-of-Experts Model for Dynamic Emotion Prediction in Movies.**  
**A Goyal**, N Kumar, T Guha, SS Narayanan  
*IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*
- 2015 **Object Matching using Speeded Up Robust Features.**  
 NK Verma, **A Goyal**, AH Vardhan, RK Sevakula, A Salour  
*Asia Pacific Symposium on Intelligent and Evolutionary Systems (IES)*
- 2015 **Template Matching for Inventory Management using Fuzzy Histogram and Spatial Filters.**  
 NK Verma, **A Goyal**, A Chaman, RK Sevakula and A Salour  
*IEEE Conference on Industrial Electronics and Applications (ICIEA)*

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## Pre-prints

- 2024 **Differentiable GPU-Parallelized Task and Motion Planning.**  
 W Shen, C Garrett, **A Goyal**, T Hermans, F Ramos  
*arXiv:2411.11833*,  
 Also, in DiffOpt@CoRL 2024

- 2024 **3D-MVP: 3D Multiview Pretraining for Robotic Manipulation.**  
S Qian, K Mo, V Blukis, D Fouhey, D Fox, **A Goyal**  
*arXiv:2406.18158*
- 2024 **AdaDemo: Data-Efficient Demonstration Expansion for Generalist Robotic Agent.**  
ation Expansion for Generalist Robotic Agent T Mu, Y Guo, J Xu, **A Goyal**, H Su, D Fox, A Garg  
*arXiv:2404.07428*

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## Notable Talks

- Sep '24 **MILA Robot Learning Seminar**, *View Transformers for 3D Manipulation in Robotics.*
- May '24 **Keynote Manipulation Skills@ICRA-24**, *Towards fast and precise sensorimotor skill learning.*
- Nov '23 **Spotlight NeuRL-RMW@CoRL-23**, *RVT: Robotic View Transformer for 3D Object Manipulation.*
- Oct '23 **UW Robotics colloquium**, *RVT: Robotic View Transformer for 3D Object Manipulation.*
- Aug '23 **Seattle Robotics Club**, *Towards General Purpose Robotic Learning.*
- Apr '23 **MILA Vision Reading Group**, *RVT: Robotic View Transformer for 3D Object Manipulation.*
- Feb '23 **NVIDIA NVCV All-hands**, *RVT: Robotic View Transformer for 3D Object Manipulation.*

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## Mentoring

- 2024 **Yi Li**, *PhD UW.*
- 2023 **Shengyi Qian**, *Research Scientist: Meta, PhD UMich.*
- 2022 **Anthony Simeonov**, *PhD MIT.*
- 2022 **Ishika Jain**, *PhD USC*, Primary Mentor: Valts Bulkis.
- 2020 **Bowei Liu**, *BS Princeton.*

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## Teaching Experience

- Fall 2019 **COS529 Advanced Computer Vision**, *Princeton University*, Graduate Student Instructor.
- Fall 2018 **COS429 Computer Vision**, *Princeton University*, Head Teaching Assistant.
- Fall 2017 **EECS442 Computer Vision**, *University of Michigan*, Graduate Student Instructor.
- Winter 2018

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## Service

- 2024 **Program Committee Member.**  
RSS Pioneers
- 2024 **Area Chair.**  
ICLR
- 2020-24 **Reviewer.**
- 2024: RSS
  - 2023: CVPR, RSS
  - 2022: ICLR, CVPR, ECCV, ICML, NeurIPS
  - 2021: ICLR, CVPR, ICCV, ICML, NeurIPS
  - 2020: ICLR, CVPR, ECCV, TPAMI
- 2013-15 **Counselling Service, IIT Kanpur.**
- **Assistant Coordinator:** Responsible for managing sensitive situations in the undergraduate community and organizing week-long orientation for over 800 freshers
  - **Academic Mentor:** Mentored students struggling academically.
  - **Student Guide:** Ensured smooth induction of 6 freshmen into the college environment.