

Shubham Agrawal

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EDUCATION

Columbia University in the City of New York

Master of Science in Computer Science; Vision, Graphics, Interaction and Robotics track; CGPA: 3.8/4.0

New York, NY

Aug 2019 - May 2021

Indian Institute of Technology Kanpur

Bachelor of Technology in Computer Science; CGPA: 8.7/10.0

Kanpur, India

Jul 2013 - Apr 2017

EXPERIENCE

Samsung Research America

Senior Researcher, Machine Learning

Engineer, Machine Learning Research

New York, NY, USA

March 2023 - Present

Jun 2021 - March 2023

- 3D computer vision research: Simultaneous scene understanding and grasp estimation, leveraging foundational visual language models for generalizable scene reconstruction. The research led to multiple publications and patents. (SceneGrasp , RIC)
- Lidar to floorplan: Generated a visually pleasing rectilinear floor plan from a noisy lidar-scan image. (video). The research technology is now in the production phase for the Samsung Robot Vacuum Cleaner.
- Autonomous table clearing and dishwasher loading - Key components: (a) In-house 6DoF Perception Data collection and labeling tool (video), (b) instance segmentation, (c) 6DoF pose estimation, (d) glass detection, (e) stereo depth prediction, and (f) sensor fusion

Tesla Inc

Autopilot Intern (Non Disclosure Agreement)

Palo Alto, USA (remote)

Jun 2020 - Aug 2020

- Identify and associate the same objects visible in multiple cameras to create object tracks across time.

Adobe Inc

Member of Technical Staff (C++, JavaScript Software Developer)

Research Intern (Machine Learning)

Noida, India

Jul 2017 - Jan 2019

May 2016 - Aug 2016

- Implemented CRUD operations for highlight/underline/sticky notes for Adobe PDF Liquid mode . Shipped fixes for multiple critical security vulnerabilities (null pointer dereferencing, buffer overflow, JavaScript parameter tampering).

PROJECTS AND PUBLICATIONS

- [2023 IEEE IROS] Real-time Simultaneous Multi-object 3D Shape Reconstruction, 6DoF Pose Estimation and Dense Grasp Prediction: Shubham Agrawal, Nikhil Chavan-Dafle, Isaac Kasahara, Selim Engin, Jinwook Huh, Volkan Isler. , Website , Patent award
- [2023 (under review)] RIC: Rotate-Inpaint-Complete for Generalizable Scene Reconstruction: Isaac Kasahara, Shubham Agrawal, Selim Engin, Nikhil Chavan-Dafle, Shuran Song, Volkan Isler. Website , Patent award
- [2022 IEEE IROS] SEaT: Scene Editing as Teleoperation: Shubham Agrawal*, Yulong Li*, Jen-Shuo Liu, Steven K. Feiner, Shuran Song. Scene Editing as Teleoperation: A Case Study in 6DoF Kit Assembly. (* = equal contributions). Website .
- [2021 PMLR CoRL] Fit2Form - 3D Generative Model for Robot Gripper Form Design: Shubham Agrawal*, Huy Ha*, Shuran Song. Website .
- [2022 IEEE IROS] Camera-centric Object Shell Representation for Simultaneous Object Reconstruction and Grasp Prediction: Nikhil Chavan Dafle, Sergiy Popovich, Shubham Agrawal, Daniel Lee, Volkan Isler. arXiv , Patent Award
- [2021 IEEE ICRA] AdaGrasp - Gripper Aware Grasping: Zhenjia Xu, Beichun Qi, Shubham Agrawal, Shuran Song. Website .
- [2017 ACM SIGSPATIAL] Smart Geo-fencing with Location Sensitive Product Affinity : arXiv Patent

SKILLS

- Languages | Libraries:** C++, Python, Pytorch, Ray, ROS, (Isaac Sim, Pybullet, Gazebo) simulators
- Hardware Experience:** (UR5, Panda, Kinova, Ridgeback) Robots, (WSG50, RG2, BHand) Grippers, RGB-D Cameras, Raspberry Pi

ACHIEVEMENTS & EXTRACIRRICULAR

- Course Assistant Fellowship, Columbia University: awarded for stellar academic performance and outstanding work as a TA
- Co-founded TOEFL Infinite , an android application for TOEFL and GRE exam preparation with 150K downloads on Google Play
- All India Rank 191, IIT-JEE Advanced 2013 (among 150K candidates)
- Teaching: Computational Aspects of Robotics (Head TA) , Applied Machine Learning , Advanced Database Systems
- Research assistantships: Shuran Song Columbia University (Sept 2019 - present), Gaurav Sukhatame USC (May 2019 - Aug 2019)
- CS Department Senator, University of Southern California
- Ran TCS New York City Marathon 2023. Love music and playing flute in my free time