

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

Research Engineer

New York, NY, USA

Jun 2021 - Present

- Robotics engineering infrastructure and research on 3D shape reconstruction in occlusion

Tesla Inc

Autopilot Intern (Non Disclosure Agreement)

Palo Alto, USA (remote)

Jun 2020 - Aug 2020

- Worked on identifying and associating same objects visible in multiple cameras to create object tracks across time. Wrote verification scripts for object tracks outlier rejection component

Adobe Inc

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

Noida, India

Jul 2017 - Jan 2019

- Implemented CRUD operations for highlight/underline/sticky notes for next generation PDF webview using Javascript. Formulated efficient algorithm for modeling an annotation's position across multiple PDF views (with variable structure and content)

Adobe Inc

Research Intern (Machine Learning)

Bangalore, India

May 2016 - Aug 2016 (voluntarily working till Jun 2017)

- Created a novel end-to-end system for automated design of affinity (user's interest) based smart geo-fences for selective targeting. **US Patent US20180232767A1** [✉](#) . **ACM SIGSPATIAL'17 conference paper** [✉](#)

PROJECTS

- SEaT: Scene Editing as Teleoperation:** To make teleoperation accessible to nonexpert users, we proposed the SEaT framework, where the key idea is to transform the traditional "robot-centric" interface into a "scene-centric" interface **arXiv** [✉](#) **Website** [✉](#) .
- Fit2Form: 3D Generative Model for Robot Gripper Form Design:** Given an object to be grasped, generate a pair of fingers for parallel jaw gripper that maximize the design objectives. **CoRL'20 conference paper** [✉](#) . **Website** [✉](#) .
- AdaGrasp: Learning an Adaptive Gripper-Aware Grasping Policy:** Executed all real world experiments using UR5 arm, RGBD camera and various grippers. **ICRA'21 conference paper**. [✉](#) . **Website** [✉](#) .
- Automatic Differentiation and Continuous Sensitivity Analysis of Rigid Body Dynamics:** Implemented Adjoint Method for getting fast differentials of integrated ODEs using C++ template metaprogramming. **arXiv** [✉](#) .
- 3D Style transfer:** from 2D images to 3D meshes for novel view synthesis. Using neural-mesh-renderer and deep-voxels representations, we optimize the original mesh by applying style loss to the generated images. **Code** [✉](#) , **Report** [✉](#) .
- Kaggle Diabetic Retinopathy Classification:** Several pre-processing steps (CLAHE, smoothing, blood vessels segmentation), EfficientNet-B2 and TTA gave an optimized kappa score of 0.895 and an overall standing 1311/2943 on leaderboard. **Code** [✉](#) .
- Porn Block:** Chrome extension for realtime identification and blurring of sensual images from webpages. Trained VGG-net on scrapped data using KerasJS. Wrote a proxy server to bypass CORS while generating the client-side image matrix. **Code** [✉](#) .

SKILLS

- Languages:** C++, Python, JavaScript
- Tools:** PyTorch, Scikit-Learn, Numpy, Pandas, UR5 Robot, (WSG50, RG2, BHand) Grippers, RGB-D Camera

ACHIEVEMENTS & EXTRACIRRICULAR

- US Patent US20180232767A1** [✉](#) Smart Geo-fencing with Location Sensitive Product Affinity
- Course Assistant Fellowship**, Columbia University: awarded for stellar academic performance and outstanding work as a TA
- Selected for **Advanced Master Research Specialization** at Columbia University offering one fully - funded semester of research
- All India Rank 191**, IIT-JEE Advanced 2013 (among 150K candidates)
- Course assistantships: 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)
- Received **Academic Excellence Award** for excellent academic performance during 2013-14 curriculum at IIT Kanpur
- Received **Best Rookie Team Award**, and **Design Finalists**, BAJA Student India 2015 (an inter-collegiate all-terrain vehicle design competition)
- Served as CS Department Senator at Viterbi Graduate Student Association, University of Southern California for spring semester, 2019
- Co-created TOEFL Infinite [✉](#) , an android application for TOEFL and GRE exam preparation with 150K downloads on Google Play