

# Shubham Agrawal

sa3762@columbia.edu [✉](#) | 213-446-5430 | LinkedIn: [submagr ✉](#) | Github: [submagr ✉](#) | Google scholar [✉](#) | New York City, NY

## EDUCATION

### Columbia University in the City of New York

Master of Science in Computer Science; CGPA: 3.8/4.0

New York, NY

Aug 2019 - May 2021 (expected)

### Indian Institute of Technology Kanpur

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

Kanpur, India

Jul 2013 - Apr 2017

## EXPERIENCE

### 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

- **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. **First author 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 Paper** [✉](#) .
- **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 [✉](#) , 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