

# Shubham Gupta

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CS graduate with 1 year of software development and 2 years of Computer Vision research experience.

## EXPERIENCE

### ULTRAVIOLET, NYU | COMPUTER VISION LEAD

Sep 2022 - Present | New York City, USA

- Contributed to finishing 5<sup>th</sup> in the RoboMasters University League 2023.
- Reduced inference latency by 40% on YOLOv5 using TensorRT deployed on Jetson and x86 devices using Docker NGC containers.
- Responsible for managing and delegating tasks to the vision team.

### NYU COURANT | CLIMATE MODELING RESEARCH ASSISTANT

Feb 2023 - Present | New York City, USA

- Updated and restructured Machine Learning content for [L96Demo](#).
- Optimized Jupyter Notebooks and Book compile times by refactoring code for [L96Demo](#).

### NYU MARRON | URBAN TRANSIT RESEARCH ASSISTANT

Jan 2023 - Aug 2023 | New York City, USA

- Experimented with Open Vocabulary Semantic Segmentation models: [X-Decoder](#) and [Grounded-SAM](#), and [ViT-Adapter](#) to self annotate man-made boundaries from Google Street View data.

### HP (ENTERPRISE) | SOFTWARE ENGINEER INTERN

Jan 2022 - Jul 2022 | Bengaluru, India | [Certification](#)

- Constructed SQL queries and SpringBoot APIs to be used by visualizations in production. The APIs provided insights on customer devices and apps.
- Refactored an internal API tool by cutting down on graphic components for a cleaner user interface using AngularJS and Flask.

### INDIAN SPACE RESEARCH ORGANIZATION | RESEARCH

Jul 2019 - Apr 2020 | RRSC-S, ISRO, Bengaluru, India | [Certification](#)

- [Published work](#) at the international conference of Computer Vision and Machine Intelligence (CVMI 2022).
- Developed a Sentinel-2 multispectral data pipeline using [SnaPy](#) and [GDAL](#) that was fully automated requiring zero human annotation for water bodies.
- Demonstrated DeeplabV3+ can achieve 0.92 mIoU on Bengaluru lakes using transfer learning weights of PASCALVOC2012 dataset.

## PUBLICATIONS

- "Analysis and application of multispectral data for water segmentation using machine learning." (CVMI 2022). Analyzed the performance of eight machine learning classification algorithms on multispectral data provided by Sentinel-2. Empirically demonstrated Short wave infrared bands are best suited for water body segmentation. [\[preprint\]](#) [\[code\]](#) [\[publication\]](#)
- "WSSL: Weighted Self-Supervised Learning Framework for Image-Inpainting." (CGVCVIP 2022). Demonstrated a novel technique for image inpainting with using self supervised learning achieving competitive results with supervised learning models. The technique uses a combination of weighted pretraining tasks and the downstream loss function uses a weighted sum of reconstruction loss and perceptual loss leading to superior results. [\[preprint\]](#) [\[code\]](#) [\[publication\]](#)

## PROJECTS

### COMPRESSED SENSING | Python3 | 2023

- Implement Compressed Sensing on MRI data using primal dual splitting algorithm using random and equidistant masks.

### LEAVE YOUR CLOTHES BEHIND | Python3, PyTorch, HPC | 2023

- Extract clothes from monocular RGB videos to be used as 3D assets using [TorchNGP](#).

## EDUCATION

### NEW YORK UNIVERSITY

MASTERS IN COMPUTER

ENGINEERING

GPA: 3.67 / 4.0

May 2024 | New York City, USA

### PES UNIVERSITY

B.TECH IN COMPUTER SCIENCE

AND ENGINEERING,

GPA: 8.39 / 10.0

May 2022 | Bengaluru, India

## LINKS

Portfolio:// [iamshubhamgupto](#)

LinkedIn:// [shubhamgupto](#)

Github:// [iamshubhamgupto](#)

Google Scholar:// [shubhamgupta](#)

## SKILLS

### PROFICIENT

C++ • Python 3 • Java • shell  
Numpy • Pandas • h5py  
Numba • PyTorch • scikit-learn  
MySQL • SpringBoot • ElasticSearch  
Docker • Kubernetes • Github

### FAMILIAR

Jenkins • Grafana • Javascript  
Flutter • Trivvy • Hadoop

### SOFTWARE

Jupyter • QGIS • SNAP • MS Office

## COURSEWORK

### GRADUATE

Scientific Software Engineering  
Image & Video Processing • Deep  
Learning • Real Time Embedded  
Systems

### UNDERGRADUATE

Data Structures • Design Patterns  
Design and Analysis of Algorithms  
Advanced Algorithms  
Graph theory • Cloud Computing  
Performance Engineering  
Intro to Data Science • R

## TEACHING

### CLOUD COMPUTING

Spring 2022, PES University

- Created slides and lab manuals for Kubernetes and Amazon DynamoDB.
- Created [problem statements](#) for lab finals and evaluated submissions.

## CERTIFICATIONS

[Associate Cloud Engineer](#)

[Architecting with Google Compute Engine](#)