Shubham Gupta

sg7761@nyu.edu | +1 9176032850 | Start date: June 10, 2024
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 5th in the RoboMasters University League 2023.
- Reduced inference latency by **40%** on **YOLOv5** using **TensorRT** deployed on Jetson (aarch64) 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 <u>L96Demo</u>.
- Optimized Jupyter Notebooks and Book compile times by refactoring code for <u>L96Demo</u>.

NYU MARRON | Urban Transit Research Assistant
Jan 2023 - Aug 2023 | New York City, USA
- Experimented with **Open Vocabulary Semantic Segmentation** models: <u>X-Decoder</u> and <u>Grounded-SAM</u>, 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 | <u>Certification</u>
- 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 | <u>Certification</u>
- <u>Published work</u> 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.<u>[preprint]</u> <u>[code]</u> <u>[publication]</u>

- "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. <u>[preprint]</u> <u>[code]</u> <u>[publication]</u>

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 <u>TorchNGP</u>.

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

<u>Associate Cloud Engineer</u>
<u>Architecting with Google Compute Engine</u>