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 5^{th} 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