Shubham Gupta

gupta.shubham@nyu.edu | +19176032850
https://linkedin.com/in/shubhamgupto | https://iamshubhamgupto.github.io

Machine Learning Engineer: Second year graduate student studying Computer Engineering at New York University and Climate Modelling Research Assistant. Extracurricular Computer Vision and DevOps lead. Three internships with experience in open-source contributions and working with PyTorch, TensorRT, Python, Docker, and Git.

Experience

NYU RoboMaster: Ultraviolet — New York City, US
Computer Vision and DevOps Lead | *Mentor: Chris DiMauro* — *September 2022 – Present*

- Lead SDK and Machine Learning developer at Ultraviolet, a DJI robotics eSports team.
- Spearheaded **large scale HPC** experimentation for tuning quantized object detection models, including YOLOv8, YOLOv9, and RT-DETR. Successfully integrated with Kalman filters for motion prediction and **trajectory forecasting**.
- Compiled high-performance **ROS2 machine learning inference containers** for ARM64 Nvidia GPUs.
- Competed in RoboMaster University League 2023 and secured **5th position** out of twenty teams internationally.

Aruba, a Hewlett Packard Enterprise company — Bangalore, India
Software Development Intern — *January 2022 – July 2022*

- Developed **SpringBoot APIs** using ElasticSearch and Postgres data for IoT Operations, edge to cloud story.
- Designed and deployed monitoring dashboard for **150k** customer device statistics using ElasticSearch, Grafana and Python.
- Managed dependencies for Docker containers. Removed **1000+** low, medium, and high priority CVE vulnerabilities.

Indian Space Research Organization — Bangalore, India
Research Intern | *Advisor: Dr. Hebbar R* — *August 2019 – April 2020*

- **Published work** at the international conference of Computer Vision and Machine Intelligence (CVMI 2022).
- Demonstrated an automated **Sentinel-2** data pipeline with SnaPy and GDAL for water body detection, **eliminating** manual annotation. Tested on **DeeplabV3+** and a custom architecture for **near real time** water segmentation.

Technical Skills

Languages: Python3, Triton, C++, Java, SQL, Shell, Lucene, LaTeX
Libraries: PyTorch, Pytorch3D, Onnx, TensorRT, OpenCV, Scikit-learn, Numpy, Pandas, Numba, PyRealSense2, Flask, FFmpeg
Frameworks: ROS2 Humble, SpringBoot, Elasticsearch, Jekyll, Hugo, Jenkins, Kubernetes, CUDA
Applications: HPC, AWS, GCP, Docker, Grafana, QGIS, Github, Jira, Confluence, Firebase, Postman, Lightroom, Blender
Certifications: Associate Cloud Engineer, Architecting with Google Compute Engine, 30 Days of Google Cloud

Education

New York University — New York City, US
Master of Science in Computer Engineering — 3.78/4.00 — *Sep 2022 - May 2024*

PES University — Bangalore, India
Bachelor of Technology in Computer Science and Engineering — 8.39/10.0 — *Aug 2018 - May 2022*

Publications

Lee, K., **Gupta, S.**, Kim, S., Makwana, B., Chen, C., & Feng, C. (2023). SO-NeRF: Active View Planning for NeRF using Surrogate Objectives. arXiv preprint arXiv:2312.03266. **[preprint]** **[code]**

Gupta, S., Uma, D., & Hebbar, R. (2023). Analysis and application of multispectral data for water segmentation using machine learning. In Computer Vision and Machine Intelligence: Proceedings of CVMI 2022 (pp. 709-718). Singapore: Springer Nature Singapore. **[preprint]** **[code]** **[publication]** **[slides]**

Projects

Cavemen: A prehistoric approach for Mapless Navigation | **[Website]** | *Python3, SIFT, FAISS, VBoW, Redis* — 2023

- Visual Place Recognition and navigation using only monocular input and classic visual features. **Top submission** for coursework Robot Perception ROB-GY 6203 Fall 2023. **[LinkedIn]**

LYCB: Leave Your Clothes Behind | **[Website]** | *HPC, Segment-Anything, COLMAP, Pytorch3D* — 2023

- Proof-of-Concept to capture real world clothes on hand held devices and create assets to be used in Blender or virtual try-ons.

.

Open-Source - [GitHub]

Added NVIDIA Jetson support to `mamba_ssm` and `causal-conv1d` python modules with CUDA compatibility 72 and 87. The changes allows users to apply `mamba_ssm` on embedded systems. **[Mamba-ssm PR]** **[Causal-Conv1d PR]**

Optimized code run time and website deployment. Created content for machine learning with Lorenz-96 climate model. **[Website]**

Wrote a Colaboratory object detection demo notebook for ViT-Adapter, published in **ICLR 2023**. **[GitHub]**