Shubham Gupta

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Education

New York University — New York City, US
Master of Science in Computer Engineering — *May 2024*

- Research Assistant with the M^2Lines project advised by Dr. Laure Zanna for climate modeling and web development (2023).
- Research Assistant with the IBX project advised by Dr. Elif Ensari for Open Vocabulary Object Detection (2023).
- Coursework: Deep Learning, Robot Perception, Real Time Embedded Systems, Scientific Computing, Internet Protocols

PES University — Bangalore, India
Bachelor of Technology in Computer Science and Engineering — *May 2022*

- Teaching Assistant for UE19CS352 Cloud Computing by Dr. Venkatesh Prasad (2022).
- Secured 1^{st} place at MIT Covid19 Challenge India: Track I (2020).
- Coursework: Data Structures and Algorithms, Advanced Algorithms, Design Patterns, Cloud Computing, Compiler Design, Operating Systems, Software Engineering, Performance Computing, Computer Networking

Publications

Gupta, Shubham, et al. "Analysis and Application of Multispectral Data for Water Segmentation Using Machine Learning." Computer Vision and Machine Intelligence, Springer Nature Singapore, 2023, pp. 709–718. Crossref, doi:10.1007/978-981-19-7867-8_56. [code] [slides]

Experience

NYU Robomaster: Ultraviolet — New York City, US
Computer Vision Lead - Mentor: Chris DiMauro — *September 2022 – Present*

- **Leading** a team to build a detection and tracking solution using **ROS2** and **DeepStream SDK**.
- Cut YOLOv5 inference latency by 40% using **TensorRT** on Jetson (aarch64) and x86, deploying with Docker NGC containers.

Aruba, a Hewlett Packard Enterprise company — Bangalore, India
Software Development Intern - Manager: Sachin Sanap — *January 2022 – July 2022*

- Developed **SQL** queries and **SpringBoot** APIs for customer device and app usage insights in production.
- Created a tool for developers to visualize customer resource statistics using **Grafana**, SQL, **Elasticsearch**, and **Python3**.

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.

Projects

Compressed Sensing | *Python3, Numpy, Github, JupyterBook* — 2023

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

Leave Your Clothes Behind | *Python3, HPC, PyTorch, Blender* — 2023

- Extract clothes from RGB videos using **SAM** and **COLMAP** to be used as 3D assets generated by **NeRF2Mesh** .

Technical Skills

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

Leadership

Computer Vision Lead: Responsible for an interdisciplinary team of fifteen to train, optimize and deliver a detection and tracking solution at NYU Robomasters. Our solution helped secure 5^{th} place in the RoboMasters University League 2023 against twenty teams from USA, Singapore and Japan. We use Jira to track and delegate tasks.

Head of Android Development: Responsible for conducting and planning events on behalf of Google Developer Student Clubs: PES University chapter. Responsible to deliver the Android Study Jams (2021) which received over a 1000 unique views.

Founder: Started CBeyond Technologies LLP (2021) to develop a contactless cloud based authentication solution for our building abiding COVID regulations.