Gunjan Sethi

+1 (412) 636-6358 | gunjans@andrew.cmu.edu | www.linkedin.com/in/gunjan-sethi/

EDUCATION

Carnegie Mellon University – School of Computer Science — Pittsburgh, PA
Master of Science in Robotic Systems Development | GPA: 4.17/4.33 — May 2023
Relevant Coursework: Computer Vision, Deep Learning, Geometry-based Vision

REVA University — Bangalore, India
Bachelor of Technology in Computer Science and Engineering | GPA: 8.87/10 — Jul 2018

EXPERIENCE

Robots Perceiving and Doing Lab, Link — Pittsburgh, PA
Research Assistant, Advised by Prof. David Held — Sep 2022-Present

- Performing literature review on keypoints-based representations for object detection in 2D and 3D, adding uncertainty estimates to predictions

Argo AI — Pittsburgh, PA
Software Engineer Intern, Deep LiDAR — May 2022-Aug 2022

- Proposed a probabilistic 3D object detection pipeline for estimating uncertainties in bounding box detections; performed in-depth literature review; presented to the team
- Developed loss functions and model architecture upgrades to optimize and learn parameters for direct modeling of bounding box parameters as distributions using Tensorflow
- Created frame-wise BEV and pointcloud visualizations for bounding box parameter uncertainties as ellipsoids, cuboids, and arcs using Open3D and Python3

Comofi MedTech — Bangalore, India
Computer Vision Engineer — Jan 2021-Jul 2021

- Proposed and implemented an ensemble method for 3D segmentation algorithm in Python utilizing connected components; improved performance by 20%
- Implemented region-growing algorithm for segmentation of organs on CT scan (3D) data with 85% accuracy in Python
- Built a pointcloud preprocessing pipeline with Intel Realsense, PCL and ROS in C++ for filtering and downsampling incoming pointcloud data

MagikEye Inc. — Bangalore, India
Software Engineer — Jul 2020-Dec 2020

- Deployed web service on Amazon EC2 with Docker containers as SLURM nodes for customer support and testing
- Conducted performance optimization on RaspberryPi Zero using QPULib by enabling non-blocking GPU load and stores for repeated mathematical operations in convolutions
- Wrote production-level, low-latency Python and C++ ROS packages for depth sensor; extended existing SDK to support ROS

QtPi Robotics — Bangalore, India
Product Engineer — Aug 2018-June 2020

- Led a team of 4 for development of an autonomous scaled-down simulation of a digital supply chain utilizing ESP32, RFID, IR sensors, Firebase, and an interactive dashboard for Robert Bosch
- Conceptualized design elements for website's UI/UX on AdobeXD to highlight key product USPs with, increasing customer engagement and session duration

ACADEMIC PROJECTS

Autonomous Reaming for Hip Replacement Surgery, Link — Carnegie Mellon University | Jan 2022 - Present

- Led the development of Perception and Sensing subsystem - implemented pose tracking and error detection for dynamic compensation of robot arm using Atracsys SpryTrack in C++, integrated with Planning and Controls via ROS
- Managed systems engineering and project management efforts between all stakeholders with regular communication, updates and presentations

Utterance to Phoneme Mapping — Carnegie Mellon University | Mar 2022

- Developed CNN+LSTM-based framework with CTCLoss and decoder for mapping sequence of utterance features to phonemes using PyTorch; achieved Levenshtein distance of 5.75

Multi-View Reconstruction — Carnegie Mellon University | Dec 2021

- Implemented complete 3D reconstruction pipeline on "temple" dataset: 8-point algorithm, 7-point algorithm, triangulation, epipolar correspondence matching and bundle adjustment using Python and NumPy

Bag of Visual Words — Carnegie Mellon University | Sep 2021

- Built a recognition system with Harris Corner Detector, spatial pyramid matching for feature extraction of scenes with 80% accuracy; implemented deep feature extractor (VGG-16) using PyTorch and compared results

SKILLS

Python, C++, ROS, OpenCV, NumPy, SciPy, PyDicom, PyTorch, Tensorflow, Git, Docker, Linux, MATLAB