Deep Amsih Shah

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Education

Stevens Institute of Technology, New Jersey   **Sep 2023-May 2025**
Master of Science: Data Science
Adani Institute of Infrastructure Engineering, India   **Aug 2019-May 2023**
Bachelor of Engineering: Information and Communication Technology

Work Experience

Finerr   **May 2024- Feb 2025**
Artificial Intelligence Intern   New Jersey, USA
- Engineered and deployed end-to-end Voice AI Agents for pharmacy automation using **Livekit**, Twilio, and Python Backend, enabling **real-time voice interaction** for tasks like prescription refills, appointment scheduling, and NewRx Inquiries.
- Integrated Deepgram and Cartesia for STT and TTS for robust speech interfaces, and built an **RAG** to retrieve important State and Federal Government policy data, enabling the **LLM** to provide high-accuracy and context-aware responses.
- Reduced manual call handling time **by 60%** and achieved over **91% response** accuracy across diverse customer queries. Also reduced average call duration from **3.5 minutes** to under **120 seconds** after dialogue optimization.

Indian Institute of Science   **Feb 2023-Aug 2023**
Computer Vision Intern   Bengaluru, India
- Architected a two-stage pipeline for high-precision metal defect detection at IISc's Smart Factory, first leveraging **YOLOv8** for initial defect detection achieving **90.5% mAP** and subsequently employing a **U-Net model** for precise pixel-level segmentation within identified regions and then for classification.
- Specialized the defect detection model for **Pneumatic Cylinders & DC Motors** by creating and manually annotating a **400-image custom dataset**, integrating it with the 9.4k NEU benchmark dataset to improve real-world performance.
- Executed the full **Defect detection pipeline** including data prep, YOLOv8 model and U-Net training/fine-tuning, and performance evaluation, validating the system for quality control tasks.

BISAG-N   **May 2022-Dec 2022**
Computer Vision Intern   Gandhinagar, India
- Implemented a **real-time multi-object tracking** system using YOLOv8m for detection and a custom-built **SORT pipeline** (4D Kalman Filter + Hungarian algorithm), achieving frame-by-frame **tracking at ~30 FPS** identifying cars, trucks, and people.
- Enhanced background robustness via adaptive background modeling—using histories—to suppress noise from environmental changes, boosting **foreground detection** precision and reducing false-positive rate by over **40%.**

Achievements
- Awarded a **$14,000 merit-based scholarship** toward my Master's degree in Data Science at Stevens Institute of Technology.
- Awarded a certificate and **$500 honorarium** at the Indian Institute of Science, the nation's top-ranked research institution.

Technical Skills & Credentials

Programming Languages:	Python, C++, C, SQL
Computer Vision Skills:	Object Detection, 3D Reconstruction, NeRFs, Gaussian Splatting, Novel View Synthesis, Pose Estimation, Depth Estimation, SLAM, Semantic Segmentation, Multi-View Stereo Vision, Volumetric
Computer Vision Tools:	OpenCV, YOLOv8, Detectron2, Segment Anything (SAM), CLIP, DINOv2
Deep Learning Skillset:	Neural Networks (CNNs, RNNs, Vision Transformers), Residual Networks, Diffusion Models, GANs
ML Frameworks:	PyTorch, TensorFlow, Keras, Scikit-learn, XGBoost
Cloud expertise:	AWS, Azure, Docker, Kubernetes, Git, CI/CD, GCP
Certifications:	1. AWS Solution Architect – Associate, 2. Microsoft Certified: Azure Administrator Associate, 3. NVIDIA - Certified Associate AI Infrastructure and Operations, 4. TensorFlow Developer Certificate

Academic Projects

3D-Point-Cloud-Analysis-and-Visualization-using-Open3D Link
- Built a **3D point cloud processing** pipeline using **Open3D** and **Python**, implementing voxel downsampling, statistical outlier removal, surface normal estimation, and segmentation to enhance data quality and robustness.
- Visualized and analyzed high-resolution **3D scans** in real-time, improving **object localization, structural understanding**, and **scene perception** in simulated environments.
- Applied advanced 3D perception techniques such as plane segmentation (**RANSAC**) and clustering (**DBSCAN**) to detect and isolate objects from noisy environments, enabling accurate scene understanding.

3D Scene Reconstruction from Stereo Vision Link

- Implemented robust feature matching to establish reliable Correspondences between **uncalibrated stereo** views, enabling accurate **Epipolar Geometry estimation**.
- Built a **Structure from Motion(SfM)** pipeline to perform triangulation, accurately Estimating Depth and generating a sparse 3D point cloud from 2D image coordinates. Successfully generated 3D point cloud Reconstructions containing points.