

Sudhindra Pai

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EDUCATION

Delhi Technological University <i>B.Tech.(Computer Science and Engineering)</i>	New Delhi, 2027 9.3 CGPA
Delhi Public School <i>CBSE Class 12th</i>	Vasant Kunj, 2023 96.0%
Amity International School, Sector 46 <i>CBSE Class 10th</i>	Gurgaon, 2021 99.6%

TECHNICAL SKILLS

Languages: Python, C/C++, Bash, Java
Frameworks: Pytorch, Tensorflow, Sklearn, HuggingFace, ONNX, ROS2, CARLA
Tools: Git, Github, AWS, Google Cloud Platform, Dark-label, Anaconda, CUDNN, Docker
Hardwares: Jetson Nano, Jetson Orin, Raspberry Pi, Intel Nuc, Pixhawk Cube, Siyi A8 mini, Tarot Peeper
Platforms: Windows, Linux, Raspbian OS

EXPERIENCE

- Software Engineer, Team UAS-DTU** Feb 2024 – Present
- Led the development of End-to-end pipeline for **DARPA(Defence Advanced Research Projects Agency) Systems & Virtuals Triage Challenge**. Managed planning, coding, and testing to streamline complex data classification and enhance decision-making.
 - Pioneered *Semantic segmentation & Object detection* in the Student-led Research Team focused on Aerial Robotics. Optimized model performance to improve detection accuracy & system efficiency in diverse environments.
- Head of Machine Learning, GDSC-DTU** Sep. 2024 – Present
- Mentored a team of **40** members, guiding them in the research and development of state-of-the-art models in computer vision such as *Super-resolution, Segmentation & Vision Language models*.
 - Led educational initiatives, organized **5+** workshops and open-house sessions, teaching up to **100** students on advanced deep learning methods.

PROJECTS

- End-to-End Pipeline for Triage in Mass Casualty Scenarios (DARPA) | Ros2, Carla, Pytorch, Docker**
- Developed and deployed a *ROS2-based Autonomous Pipeline for Triage in Mass Casualty Scenarios* simulated within CARLA, leveraging multimodal data streams (RGB, IR, Radar) to provide comprehensive casualty assessments within **10s per casualty**.
 - Integrated and optimized models for *Pose estimation, Heart rate, Respiratory rate, & casualty Alertness* achieving an average accuracy of **85%** across all modalities. A high-throughput, cloud-ready system for parallel inference was made, handling up to **30** simultaneous casualty assessments with **less than 5% latency**.
- Multi-Scale Attention & Cross-Spatial learning based rPPG | OpenCV, Pytorch, Heartpy**
- Devised a novel *Multi-Scale Attention & Cross-spatial learning* approach for Remote photoplethysmography (rPPG) signal extraction from facial videos, achieving **12.22%** improvement in **SNR** and **26.74%** reduction in **MSE** compared to state-of-the art methods.
 - The algorithm fuses *Spatial and Temporal information from Multiple Scales*, effectively mitigating the impact of noise and motion blur on signal quality in challenging outdoor scenarios with **standoff distances of 1.5-3 metres**.
- Multi-Agent Navigation Framework with Georeferenced Mapping | OpenCV, GDAL, Socket.io**
- Developed a Robust system for *Real-time Map Stitching* from multiple drone perspectives, accurately *Geo-referencing Points of Interest (POIs)*, and automatically *generating navigable maps* for *agents*. Achieved mapping **accuracy** within **2 meters** and processed images with an average **latency** of less than **5 seconds per image**.

ACADEMIC ACHIEVEMENTS

- Secured **Second position** amongst Self-funded teams in the DARPA Triage Challenge, Systems category and **Sixth position** in the Virtual Simulation category, winning a prize money of **\$60,000**.
- Achieved **Second position** in the indoor simulation round and the third overall position in the **International Conference of Unmanned Aerial Systems (ICUAS) 2024 Competition**.