GOUTHAM CHANDRAPPA

chandrappagoutham52@gmail.com | +1 6232757099 | linkedin.com/in/gouthamchandrappa/ | github.com/GouthamChandrappa

EDUCATION

ARIZONA STATE UNIVERSITY | Tempe, USA. **05/2024**
Masters of science in Robotics and Autonomous Systems | GPA- 3.33
Coursework: Linear algebra, Modelling and Control of Robots, Advanced systems Modelling dynamics and control, Robotic Systems-2, Embedded Machine Learning, Design Optimization, Perception in Robotics.

RAMAIAH INSTITUTE OF TECHNOLOGY | Bangalore, India. **09/2021**
Bachelor of Engineering in Mechanical Engineering | GPA - 3.1
Coursework: Controls Engineering, Python, Artificial Intelligence, Mechatronics, Robotics.

TECHNICAL SKILLS

Programming languages: Python, C/C++, embedded C, Catkin, CMake, MATLAB, Java .
Frameworks: TensorFlow, TensorFlow Lite, Pytorch, ROS/ROS2, Keras, OpenCV, Cuda, cuDNN.
Design and Software Tools: Git, GitHub, AutoCAD, SolidWorks, Gazebo, Rviz, Moveit, Visual Studio code, PyCharm.
Certifications: Machine learning, Deep learning, AutoCAD, Solidworks, MATLAB, Tensorflow developer, Python, C++.
Udacity Nanodegree : Advanced Computer Vision, Sensor fusion, Self-driving car engineer.

EXPERIENCE

Robotics engineering intern | Void Robotics - Florida, USA. **01/2024 - Present**
- Adapted Turtlebot3 waffle, designed and integrated SLAM using ROS2 based nav2 navigation stack.
- Constructed C++ nodes for automatic shutdown on reaching the goal, reduced object-goal navigation time by 17%
- Researched, implemented and integrated Husarnet VPN into the existing servers thereby helped to transition from ngrok.
- Led the team to reduce the company expenses by 50% (from 50$ to 26$) per month by implementing Husarnet.
- Empowered boundless data transfers within docker containers across servers, catalyzed a 70% reduction in GUI rendering latency thereby spearheading expedited development processes.

Data Analyst | ASU Admission Services - Tempe, USA. **09/2022 - 01/2024**
- Led a team of new hires, fostered a collaborative environment, and achieved a 20% increase in productivity.
- Streamlined verification for high-volume data, led to a 25% reduction in processing time and improved data accuracy.

Computer Vision Engineer | YoLab - Ramaiah Institute of Technology - Bangalore, India. **09/2021 - 01/2022**
- Orchestrated the implementation of YOLO v4 architecture for object detection and tracking on Intel Real Sense D456.
- Spearheaded camera calibration, achieved precise tracking and localization of objects and sparked a 29% reduction in tracking errors.
- Adapted MediaPipe and optimized it with Kalman filters, pioneered a 40% improvement in object tracking accuracy.
- Reduced false positives by 15% and effectively decreased accidents, necessitated vigilant oversight and object detection and localization through surveillance.

ACADEMIC PROJECTS

Urban object detection using WAYMO dataset. **01/2024 - 02/2024**
- Leveraged AWS Sagemaker and S3 buckets to operate and store camera and LIDAR data of WAYMO open dataset.
- Initiated GPU accelerated training for EFFICIENTDET D1, SSD MOBILENET V2 FPN and RESNETV1 FPN models.
- Analyzed performance of the models and achieved an astonishing mAP of 0.75 on MobileNet v2, and successfully hosted the model on AWS server for real time prediction through endpoints.

Landmark detection and tracking using SLAM. **12/2023 - 01/2024**
- Computed sensor fusion and motion data collected by the robot, generated 2D environment with random landmarks.
- Implemented Graph SLAM to map and localize the robot's pose, achieving a 93% accuracy in landmark estimation.

Image caption generation using Recurrent neural networks with attention (Personal project). **11/2023 - 12/2023**
- Designed CNN-RNN based encoder-decoder model for vision2text image caption generation using RESNET50 v2.
- Performed image feature extraction using Encoder and LSTM for seq2seq text generation (Decoder), measured a confidence score of 0.90 on COCO dataset.
- Demonstrated model optimization, reported a confidence score of 0.93 by integrating Bahdanau Attention with GRU.

Facial Key point detection using MobileNetv2: Efficient CNN for mobile vision applications. **09/2023 - 10/2023**
- Built an image preprocessing pipeline with integrated data augmentation class and incorporated MOBILENET V2.
- Enhanced model efficiency by 10x during training and improved prediction by 20% through hyperparameter fine-tuning.
- Accomplished challenges in handling large datasets and utilized extracted keypoints to
- Demonstrated successful integration of new features on to the non transparent points of extracted key point locations.

Fruit detection and counting using Arduino Nanosense BLE. **06/2023 - 08/2023**
- Designed real-time sensor data collection pipeline, employed pandas, sci-kit learn framework to preprocess the dataset.
- Attained 98% accuracy in classification of fruits by the custom machine learning model backed by TensorFlow Lite.
- Accomplished pruning, quantizing the model and led deployment on Arduino, earned sophisticated edge computing.

Facial expression recognition using keras. **04/2023 - 05/2023**
- Engineered CNN backed facial expression recognition model further fine tuning resulted in 92.7% detection accuracy.
- Customized the HTML layout to enable real-time inference from Flask application model directly on the web interface.

Visual Inertial SLAM using Extended Kalman Filter **02/2023 - 03/2023**
- Implemented SLAM (Simultaneous Localization and Mapping) with Kalman Filter, fused camera and IMU data.
- Achieved robust sensor fusion for pose estimation and mapping of dynamic environments, resulted to mAP of 0.83.

Visual tracking UAV. - Parrot Mambo **11/2022 - 01/2023**
- Developed a high performance, low level flight control algorithm with an integrated Kalman Filter.
- Championed an optimized red color detection algorithm, slashed processing time by 30% and improved efficiency.