

GONUGUNTA VENKATA SAI MOTHISH

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Education

2022 - present	Indian Institute Of Science, Bengaluru M.Tech Robotics and Autonomous systems (GPA: 8.6/10.0)
2018 - 2022	Presidency University, Bengaluru B.Tech in Mechanical Engineering (Gold Medalist) (GPA: 9.17/10.0)
2016 - 2018	Narayana Junior College, Nellore Class 12th Board of Intermediate Education, Andhra Pradesh (Percentage: 95.8 %)
2016	Don Bosco English Medium High School, Nellore Class 10th Board of Secondary Education, Andhra Pradesh (GPA: 9.7/10.0)

Areas of Interests

- Deep Learning
- Artificial Intelligence
- Data Science
- Optimization
- Computer Vision
- Deep Reinforcement Learning
- Robot Learning

Skills

Languages	Python, C, C++
Frameworks	Pytorch, Tensorflow, Scikit-learn, Pandas, OpenCV, Keras
Technologies	Intel oneAPI, ROS, OpenAI gym, Nvidia Issac gym

Courses

- Theory and Applications of Bayesian Learning
- Reinforcement Learning
- Robotic Perception
- Data Science for Smart City Applications
- Stochastic Models and Applications
- Human Computer Interaction

Experience

Research Assistant in Stoch Lab IISc	May - July 2023
<ul style="list-style-type: none">• Developed a Reinforcement Learning based walking controller for a bipedal walking robot in collaboration with DRDO.• Virtual model is developed using OpenAI gym and Mujoco for simulation and deployed the Algorithm on real robot.	

Projects

Bayesian Imputation for Missing Sensor Data in IoT Devices <i>Keras, Pytorch, LSTM</i>	Mar 2023
<ul style="list-style-type: none">• Aim: Predict missing values in IoT sensor data (temperature and humidity) using Bayesian methods.• Phases: Data analysis, pre-processing, and transitioning from Frequentist to Bayesian approaches.• Bayesian Models: Bayesian Ridge Regression, Gaussian Process Regression, and PyMC3 used for accurate imputation.	

Automated Driver Assistance System | *Pytorch, TensorFlow, CNN*

Jun 2023

- **Object detection (Yolo)** and **Lane Detection** (UltraFast Lane detector) module was developed using pytorch framework. While the **Depth Estimation (MiDaS)** was developed using TensorFlow framework.
- The inference time of the model was optimized using the **Intel oneAPI Deep Neural Network Library** on the intel's developer's cloud.
- A performance speedup of approximately 4.5x was achieved using the oneAPI libraries.

Estimation of Vehicle Speed using Computer Vision | *Pytorch, OpenCV, CNN*

Apr 2023

- This was developed as a part of coursework for Robotic Perception course.
- **PWC-NET** a **CNN**-based approach was used to estimate the **optical flow** from the successive video frames.
- Yolo V5 was used for **object detection** in the given frame.
- Calculated the relative movement of predicted object's movement with optical flow vectors

Adaptive Locomotion of Walking Robots by Vision-Aided Deep Reinforcement Learning 2022 - 2024

- Technologies : **Deep Learning, Reinforcement Learning, Computer Vision**
- This my master's project at Stochastic Robotics lab
- STAGE 1 : Achieving the stable walking through **proprioception** using **Reinforcement learning** blended with physics based techniques
- STAGE 2 : Incorporating **perception** capabilities with learning-based approaches in the second stage, which makes the robot visually navigate through diverse environments with ease.

Obesity Insights:Using Clustering, Classification and Regression.| *Sklearn, PyMc3, Pandas* Apr 2023

- Utilizing linear regression, the project predicts BMI based solely on health habits and physical activity parameters.
- Employing **clustering** techniques to identify patterns and behaviors related to obesity, such as meal frequency and family history.
- Implementing a **Gaussian Process Classifier** to predict obesity levels using physical activity and health habits as features, aiding in targeted interventions and public health strategies.

Awards and achievements

2nd place in Intel OneAPI Hackathon

Jun 2023

- Worked with **Intel AI Analytics Toolkits** and Intel optimized frameworks such as TensorFlow, PyTorch,
- **Real time object detection, lane detection** and **Depth estimation** for autonomous vehicles.

University Gold Medal in bachelor's degree

Nov 2022

Winner of university Gold Medal for the Outstanding academic performance in B.Tech Mechanical Engineering 2018-2022.

Finalist in FALLING WALLS LAB INDIA

Mar 2019

Organized By **German Centre for Research (DWIH)** and Innovation and DAAD

- Theme : BREAKING THE WALL OF IRRIGATION CHALLENGES WITH ML AND IoT
- Automated Plant Watering System developed using Machine Learning (chili crop) under the guidance of Prof.Raghavendra M Deshpande and Prof.Shashidhar.V