

NAVEENRAJ KAMALAKANNAN

MACHINE LEARNING ENGINEER & ROBOTICS DEVELOPER

CONTACT

- +91-95855 58476
- therealnaveenkamal@gmail.com
- <http://itsnav.com>
- Coimbatore, India

SKILLS

Deep Learning	ROS and ROS2
Reinforcement Learning	Movelt2
GAN Data Synthesis	Nav2
Hydranets	SLAM
Point Clouds,	Sensor Fusion
NERF 3D Estimation	LIDAR Clustering
Visual Transformers	Path Planning
Unsupervised Learning	PID Control
Azure, Google Cloud	Docker
Power BI	Jenkins

EDUCATION

Robotics Developer Masterclass - Batch 2

The Construct, Spain

Final Score: 9.74/10.0

- Coursework majorly includes Autonomous Navigation, Manipulator Planning, PID Algorithms, LIDAR Data Clustering, Environment Mapping, Perception, Point Clouds.
- Final Project: Worked on Real Cafeteria Robotic Setup to pick a cup of coffee and in a holder of a mobile robot using Movelt2 and AI based perception.

Bachelor's of Technology, Electronics

Vellore Institute of Technology

2018-2022; CGPA: 8.79/10.0

- Coursework majorly includes Microprocessors, Digital Communication protocols, IOT Frameworks, PCB Design
- Worked on Deep Learning models and deployed robust models to custom designed disease detection electronic systems

PROFILE

As a dynamic Electronics Engineer, I possess a strong foundation in Machine Learning, with expertise in Reinforcement Learning. My proficiency lies in implementing complex ML models and interpretable computational models, primarily focusing on advanced RL systems. My focus extends towards ROS-based robotic systems, 3D NERF Reconstruction, and SLAM stacks. Driven by a vision to create efficient algorithms with minimal computations, I strive to deploy scalable hardware systems to automate processes. My ultimate goal is to pioneer the development of cutting-edge autonomous AI-based robotic systems and Computer Vision solutions for Autonomous Mobility applications.

WORK EXPERIENCE

Control Engineer - Full Time

Zeeco Middle East, Saudi Arabia

Jul, 2022 - Sep, 2023

- Designed and implemented various automated flare systems for Saudi Aramco, Hyundai, Japan Gasoline, etc.
- Worked with PLC, and SCADA systems with multiple communication protocols.
- Certified qualified MTR of UL Solutions: [Certificate Link](#)
- Project Samples: Flare Gas Recovery Units, Vapor Recovery Units, Flare Stacks

Data Engineer - Intern

Bajaj Finserv, India

Jan, 2022 - Jun, 2022

- Worked on designing, deploying, and maintaining scalable data pipelines using SQL DB, Azure, and ETL / ELT tools
- Successful data extraction, transformation, and appropriate loading of large datasets were part of my day-to-day activities.
- Designed and deployed SSIS and Power BI dashboards on top of mined big data and large customer datasets.
- Worked on Azure technologies including Azure SQL DB, Databricks, Data Factory, and Enterprise Data Warehouse.
- Developed data migration pipelines to transform data and migrate from Nodes to Clusters - EDW to Cosmos DB. This is an expensive high-compute process.
- Deployed a Back-propagation learning model to analyze nodes during busy hours and identify unoptimized queries by evaluating compute resource consumption.

Technology Consultant - Intern

Zeeco Middle East, Saudi Arabia

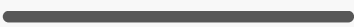
Apr, 2019 - Jun, 2019

- Worked on developing a smart management system for efficient and smooth flow of the company processes.
- This smart system runs on minimal instructions with maximum process transparency. This system was integrated into Power BI dashboards.
- Worked on developing processes to self-identifying delays/lags in processes and bypass the elements to ease future operations.
- Features: Purchase Order, Timesheet, Job Progress Dashboards.
- Technology Stack: Firebase, Android Studio, React JS, Python, GCP

NAVEENRAJ KAMALAKANNAN

MACHINE LEARNING ENGINEER & ROBOTICS DEVELOPER

LANGUAGES

English 

Tamil 


Hindi 


EXPERTISE - LEARNINGS

- Worked on DDPG, TD3, SAC algorithms to train Open AI environments, enhance autonomous car simulations.
- Implemented Point Cloud based 3D Reconstruction for Autonomous Cars. Added velocity component for 4D perception of the object.
- Worked on 3 DOF Robotic Manipulators using a Hybrid Planning Scene and MoveIt2 package for a pick and place task along with AI-based perception system.
- Got hands-on experience with Nav2 Stack, and LIDAR Cluster Segmentation from The Construct's RB-1 Warehouse Robot.

SOCIAL LINKS

 [@therealnaveenkamal](#)

 [@navz](#)

 [@therealnavzz](#)

CERTIFICATIONS

Robotics Developer Masterclass

- This 6 month masterclass includes URDF generation, Autonomous Navigation, Manipulation, Perception, SLAM, Planning, CI and CD

Deep Learning - IIT Madras

- Awarded with Silver Badge + Elite Certification

IoT Domain Specialist

- Awarded with Gold Category (Maximum Level) by NASSCOM - Govt. of India. Test includes IoT, Data Science, Management.

PROJECT EXPERIENCE

Starbots.AI: An Automated Cafeteria Experience Mar, 2024

- This project uses an Intel D435 3D camera for cup pose detection, enabling the localization of a coffee cup. Using MoveIt2 Task Constructor, the project coordinates the movement of a 3 DOF Robotic Manipulator, employing end effector poses and cartesian paths for cup grasping and navigation towards designated holders on a mobile robot for placement. The IK Plugin and Planner utilized are KDL and OMPL, respectively. The robotic arm is programmed to adeptly pick up cups from holders and drop them onto tables.
- For perception, a Convolutional Neural Network is deployed and trained on an extensive dataset of over 10,000 augmented images to accurately detect cup centroids from live RGB streams captured by the 3D camera.
- Control over the entire setup is facilitated through a website or Google Assistant via the IFTTT, with HTTP triggers supported by Jenkins.
- Demo Video: [Link](#)

Automated Chest X-Ray Disease Diagnosis Jan, 2024

- Deployed a computational model for the diagnosis of lung infections a pressing concern amplified by the pandemic. Recognizing the intricacies of Chest X-ray (CXR) analysis, including low contrast and tissue overlap, we devised a diagnostic model introducing the Exponential Pixelating Integral (EPI) transform to meticulously analyze pixel variation including the transformation of Mandelbrot and Julia fractal sets for localized feature extraction.
- Using Multivariate Adaptive Regression Splines (MARS) ensemble model we showcased exceptional accuracy and F1 scores, ranging from 98.46% to 99.45% and 96.53% to 98.10% respectively.
- Under review at **Computers in Biology and Medicine (Elsevier)**

Early Diagnosis of Parkinson's Disease May, 2021

- Engineered an innovative approach delving into brain waves: Electroencephalography (EEG) data analysis for the early-stage detection of Parkinson's disease. We understood the patterns of neuronal dysfunction, behavioral shifts, and abnormal brain electrical activities using prominent markers such as Welch's power spectral density, Hjorth parameters, Hurst Exponent, and Information factors.
- We deployed an Artificial Neural Network classifier, fine-tuning ReLU and Sigmoidal Activation Functions to achieve an accuracy of 93.3% and an impressive testing accuracy of 88.17%.
- Published our work at [Link](#)

Detection of Sepsis - Hackathon Project Feb, 2020

- Led a dynamic team in the collection and processing of blood samples from the local community, enabling the computation of pivotal biomarkers such as PCT, MDW, and more. We developed a robust machine learning model, effectively classifying the severity of medical conditions.
- Bagged the first place in the Design Category, underscoring the project's innovation and impact. We were also awarded a grant eligibility from VIT-Startup Incubation.