N. Suresh K. Kondepudi

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EDUCATION

M.S. Robotics and Autonomous Systems Graduating Fall 2024
Arizona State University, Tempe, AZ **4.0 GPA**
Relevant Coursework: Linear Algebra, Systems Controls & optimization, Optimal Control, Deep neural Networks, Perception for Robotics.

B.Tech. Electrical and Electronics Engineering ***Aug 2016 – Sept 2020***
Mahindra École Centrale, Hyderabad, India

TECHNICAL SKILLS

Programming Languages: C, C++, Python, JavaScript, MATLAB, Bash, Verilog.
Design Software: Altium Designer, KiCAD.
Tools and Software: Simulink, FreeRTOS, Git, Pytorch, Tensorflow, Docker, Linux, Postgres.
Certifications: Robotics Specialization (U of Penn), Reinforcement Learning (U of Alberta), Machine Learning (Stanford).

PROFESSIONAL EXPERIENCE

Eternal Robotics, Hyderabad, India: Robotics Engineer ***Dec 2021 – July 2022***

- Designed and programmed state estimators and LQR controllers for a heavy duty AGV Robot system.
- Charted a full robot system-design from computation units to electrical interfaces like Quad-SPI, I2C, Ethernet.
- Programmed firmware for STM32 and PIC chips with emphasis on performance and safety using RTOS features.
- Installed visual odometry(VIO) and wire tracking algorithms on an indoor painting robot.
- Led programming activities for the embedded software team for AM437 and STM32 microcontroller platforms.
- Fabricated PCB designs iterations to optimize on space without impairing performance and safety.
- Wrote communication driver programs for Ethernet and BLE connectivity on a SoM Linux board.

Mahindra and Mahindra, Pune, India: Graduate Engineer ***Mar 2021 – Nov 2021***

- Constructed an ML model using Python to detect 100HP car engine assembly defects using recorded ACT-test data. Brought down the detection and rework time from weeks to days.
- Analyzed radar signal strength indicator data for Vehicle collision avoidance systems to build failure prediction models.

Mahindra Ecole Centrale, Hyderabad, India: Research Intern ***Sept 2020 – Dec 2020***

- Aided at the Fluid Dynamics lab on an underwater robot project - the propulsion electrical circuits and data logging.
- Implemented a multi-threaded computer program for propulsion thrusters, communication and data logging.

Indian Institute of Technology Delhi, New Delhi, India: Summer Intern ***May 2019 – July 2019***

- Programmed a self-orienting 6-axis Gough-Stewart Platform with a controller using a Kalman filter on noisy IMU data.
- Built a wheeled robot with Lidars for autonomous indoor waypoint navigation and mapping using ROS packages*(hectorSLAM).*

PROJECTS

Monocular Camera Depth Estimation , *Arizona State University* Spring 2023

- Formulated a MonoCamera-IMU system estimating distance using Affine homography and Luenberger observer.
- Analyzed results with other VIO frameworks, VINS-Mono & ROVIO - the system was much faster in comparison.

Imitation Learning and Control using Pontryagin Differentiable Programming, *Arizona State University* Spring 2023

- Built a PDP based imitation learning method to estimate model dynamics and optimal control policy.
- Programmed a simulation for a cart-pole system to perform imitation learning in python.

Propaganda Detection Machine, *Arizona State University* Spring 2023

- Worked on Literature review on Fine grained propaganda analysis and tested NLP techniques like Word2Vec, tiktoken.
- Used a pre-trained BERT model as a base to detect propaganda and tested our own transformer architecture results.

PUBLICATIONS

- **Systems Engineering V - Cycle approach for Design and Development of Autonomous Underwater Vehicle (**DOI: 10.23919/OCEANS44145.2021.9705756)

EXTRACURRICULAR EXPERIENCE

- Volunteer student member in Underwater robotics club – Devilfish Robotics, ASU (2022-23).
- Held online workshops on development of aerial and aquatic robots for Student Clubs at Mahindra University (2020).
- Volunteered for the org committee at the *4th IEEE International Symposium on Smart Electronic Systems* (iSES 2018) & National *DD-Robocon* (2019)