Dinesh Ram Kumar Murugan

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EDUCATION

Northeastern University, Boston, MA **Exp May 2023**
Master of Science in Electrical and Computer Engineering GPA: 3.68/4.0
Communications, Controls and Signal Processing
Introduction to Distributed Intelligence, Digital Control Systems, Probability and Stochastic Process, Advanced Control Engineering

Sri Sivasubramaniya Nadar College of Engineering **May 2020**
Bachelor of Engineering in Electrical and Electronics Engineering GPA: 8.25/10.0
Advanced Control Systems, Discrete Time Systems and Signal Processing, Microprocessors and Microcontrollers, Advanced Soft Computing

TECHNICAL SKILLS

Programming Languages: Python, C, C++, Embedded C
Operating System: Windows, Linux
Software and Tools: MATLAB, ROS, Gazebo, Altium, RSLogix5000, Raspberry Pi, PSPICE, Arduino, PSIM, Tableau

PROFESSIONAL EXPERIENCE

R&D Electrical Engineer Co-op, Whoop Inc, Boston, MA **Jan 2022 – Jul 2022**

- Designed and Assembled 2 micro-2-layer PCB's using **Altium** and soldered them to create a hand-built IMU for gait analysis in humans.
- Developed a Kalman Filter in **MATLAB** to reduce the second order electrical noise present in the system by **4.9%**.
- Analyzed sets of data using **Python** and coded in **Embedded C** to build a prototype system for testing.

Internship Trainee, ADMMI, Abu Dhabi, UAE **May 2019 – June 2019**

- Designed the layout of electrical section of the desalination plants using **AutoCAD** and analyzed the quality of electrical and instrumentation equipment including Siemens PLC, and GE Pressure calibrators.
- Coded and tested the Ladder logic on MicroLogix 1100 kit using **RS Logix 5000** for a tank filling system in a desalination plant.

PUBLICATIONS

Implementation of Modified Differential Evolution Algorithm for Hybrid Renewable Energy System **Aug 2021**
Submitted at the International Journal of the Nigerian Society of Physical Sciences (NSPS)

- Implemented 3 optimization algorithms (Genetic Algorithm, Particle Swarm Optimization Algorithm and Modified Differential Evolution Algorithm) to minimize the cost for a HRES System while meeting the energy demand using **MATLAB**.

ACADEMIC PROJECTS

Northeastern University, Boston, MA **Sep 2022 – Dec 2022**
Design of Classical Controls for Discrete and Continuous Systems

- Modelled and designed fractional order **PID** controllers for a remote RC car to change lanes while following a fixed trajectory.
- Analyzed and compared the overshoot and the rise times obtained from the fractional PID controllers to the classical integer PID controller and LQR controller and reduced the rise time by **2.8%** and overshoot by 1.8% in **fractional PID** controller while changing lanes.

Northeastern University, Boston, MA **May 2021 – Aug 2021**
Vehicle Platoon of Autonomous Robots

- Assembled a vehicle platoon of three autonomous RC cars using NVDIA Jetson Nano and **LIDAR** cameras on **ROS**.
- Modelled a fractional order virtual damper and spring system to control the motion of cars, reducing the response time by **3.5%** when compared to a second order spring-damper system.

Northeastern University, Boston, MA **Mar 2021 – Dec 2021**
Stability and Robustness Analysis of Fractional Order Consensus Networks

- Presented a sufficient condition for stability of cyclic interconnected networks of fractional order systems using the secant condition of stability.
- Verified the robustness measure of the fractional order linear networks for different graphs using the H-2 norm of the dynamic systems theoretically and through numerical illustrations using **MATLAB**.

Sri Sivasubramaniya Nadar College of Engineering, Chennai, India **Aug 2017 – Mar 2018**
Design and Implementation of Smart Room Systems

- Detected the essential home parameters including 'Human Presence', 'Light Intensity', and 'fan speed' using sensors and utilized motors to control their respective motions.
- Designed and simulated the entire system on **Proteus** and programmed using 3 **Atmega328P microcontrollers**.
- Reduced the generated electric cost significantly by 33% for a month for a room consisting of 4 people.