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, 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 for product applications.
- Designed a Kalman Filter in MATLAB to reduce the 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 purposes.

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.

Northeastern University, Boston, MA **Feb 2021 – Mar 2021**
Controlling Epidemics on Networks

- Analyzed a real-world network of global flight connections on Python and ranked airports based on their centrality measures.
- Examined the network Epidemic Models (Susceptible – Infected _ Susceptible (SIS) and Susceptible _ Infected _ Recovery (SIR)) theoretically and computed them using Simulink.
- Created a spread model using the global flight data sets using Python and created an Immunization strategy which reduces the infection spread by 92% over time across the global network.