372, 7th Main BHCS Layout
Bengaluru 560061
Karnataka
9739891941
maithili.shetty15@gmail.com
maithilishetty.github.io
maithili-shetty-ab4009154
Maithilishetty

Maithili Shetty

Research Interests

Control Systems, Reinforcement Learning, Robotics

Education

2017–2021 **Bachelor**, *PES University*, *Electronics and Communication Engineering*, *Minor in Computer Science and Engineering*.
Specialisation: Signal Processing | Major CGPA: 9.13

Experience

2019–Present **Research Intern**, *Centre For Intelligent Systems*, PES University.
- Gained extensive knowledge on Control and Linear Systems.
- Designed neural network controllers for the identification and control of nonlinear dynamical systems with BPA and OSLA algorithms on MATLAB.
- Currently researching and working towards developing optimal control algorithms using Reinforcement Learning.

2019–Present **Secretary**, *IEEE Robotics and Automation Society*, PES University.
- In-charge of coming up with key project ideas and conducting workshops relating to the field of Robotics and Automation.
- Currently leading a group of 4 students in the domain of Simultaneous Localization and Mapping (SLAM) Robotics.

Publications

Peer-Reviewed Journals (Under Review)

J1 **Discrete-Time Design and Applications of Uncertainty and Disturbance Estimator**, with R. Padmanabhan and T. S. Chandar. *Automatica*

Conference Proceedings

C1 **A Novel Approach to Design Single-Phase Cycloconverter using SiC MOSFET and its performance analysis over IGBT**, with K. Bhat, A. Mithur and M. Miranda.
International Conference on Modelling, Simulation and Intelligent Computing, UAE

Knowledge Area

Programming Python, C, Assembly, Verilog HDL
Tools MATLAB, Simulink, ROS, LaTeX
Hardware Raspberry Pi, 8051, Arduino

Major Projects

P1 **Discrete-time Uncertainty and Disturbance Estimator** | MATLAB, Simulink

This original work attempts to extend the concept of Uncertainty and Disturbance Estimator (UDE) to the discrete-time domain wherein a discrete-time robust control law based on UDE has been derived. Numerical simulations have also been performed to validate the efficacy of the control algorithm.

P2 **Control of Inverted Pendulum** | MATLAB, Python

Implemented various control strategies to stabilize an Inverted Pendulum. The different control techniques include Reinforcement Learning, Neural Network Control and Linear Quadratic Regulator (LQR).

P3 **SIC Cycloconverter** | MATLAB, Simulink

Presented a novel approach to design a cycloconverter using SiC MOSFET as opposed to the conventional usage of IGBT. Established a comparative study between the two with respect to Distortion and System Efficiency.

Awards and Honors

2020 MRD Scholarship Awardee for the 5^{th} semester.

2017 - 2019 CNR Rao Scholarship Awardee for 1^{st}, 2^{nd}, 3^{rd} and 4^{th} semesters.

2015 International Award for Young People (IAYP) - Bronze.

Relevant Coursework

ECE Control Systems, Linear Systems, Adaptive Systems, Linear Algebra, Engineering Mathematics, Digital Signal Processing, Signals and Systems, VLSI, Artificial Neural Networks, Machine Learning, Analog Circuit Design, Digital Circuit Design, Power Electronics, Network Analysis and Synthesis, Computer Networks.

CSE Data Structures, Database Management Systems, Design and Analysis of Algorithms, Introduction to Operating Systems.

Activities

1 Core Member of the Quotient Quiz Club, PES University.

2 Organizer for 'ConQuizTador', one of India's most popular school quizzes.

3 Organizer for Aatmatrisha Debate, the annual cultural fest of PES University.