PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS072/2022

Controller Synthesis with Python

Name of the PMRF student

Nikhil Kumar Singh

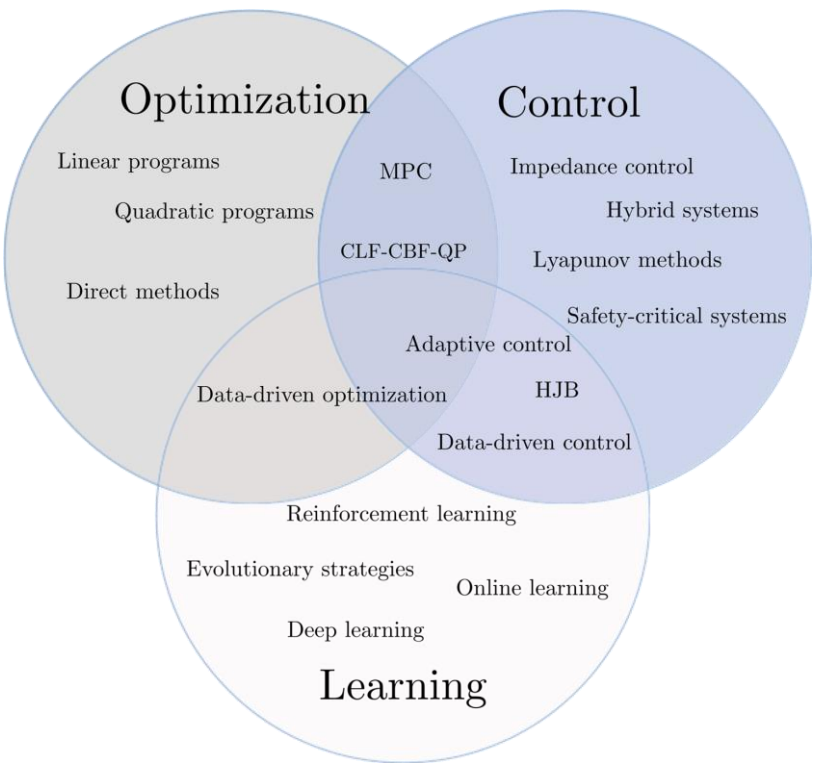
Required background of the students taught

Introductory level course for students of CSE, EE , AE

Prerequisites: Programming in Python, Basics of control theory, Linear Algebra and Calculus

Online session coordinator

Will be chosen from the list of registrants



Details of the content of the module

Week 1: Introduction to Closed-loop System and Controller Synthesis.
Week 2-3: Introduction to Python programming
Week 4-5: Implementing PID Control, MPC etc.
Week 6: Runtime monitoring using Signal Temporal Logic (STL) in Python.
Week 7: Introduction to Learning-based Controller Synthesis. Week 8: Introduction to Automatic differentiation using Pytorch.
Week 9: Implementing RL-based (Policy-gradient, Actor critic) algorithms in Python.
Week 10: Recent Works on Learning based controller synthesis

Schedule of the module

Start Date - 1st April 2023.
Lecture Schedule – Live lectures will be held every Saturday; 8 – 10 lectures
End Date – Tentatively by end of June '23;

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/gzJbKqRrHQ34FJhm7