

International Summer School -Manipal University Jaipur [ISSMUJ]-2024

[Hybrid Mode]



Project Overview

Name of Project- Design and implementation of control algorithm for Universal Robot (UR5e)

Name of instructor: Dr. Ashok Kumar Kumawat

Session: May-July 2024

Language of instruction: English

Number of contact hours: 36

Credit awarded: 03

Objective of Course

1. Mathematical model development of the Robotic system
2. Interfacing of UR5e with ROS
3. Development of the control algorithm

Course outcome: paper publication/ patent submission

Brief profile of the instructor

Dr. Ashok Kumar Kumawat is working as an Assistant Professor with Department of Mechatronics Engineering, Manipal University Jaipur, Rajasthan, India. He received B. Tech degree in Electronic Instrumentation & Control from Rajasthan Technical University, Kota, India, in 2010 and M.Tech degree in Control & Instrumentation from the Delhi Technological University, New Delhi, India, in 2014. He received PhD in control algorithm implementation on hydraulic system from Manipal University Jaipur, India, in 2010 His research interests include industrial instrumentation & control, cyber physical system, and nonlinear control.



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Lecture Plan

Topics	Lecture No.
Mathematical Model of Robotic system	1,2,3,4,5
MATLAB Simulation of the model	6,7,8,9,10
UR5e introduction	11,12,13
Interfacing of UR5e with ROS	14,15,16,17,18,19,20
Development of control law	21,22,23,24
Discussion regarding uncertainties	25,26,27
Discussion regarding nonlinearities	28,29,30
Project	31,32,33,34,35,36