



# CENTRE FOR ADVANCED STUDIES

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY



Upcoming Trainings and Workshops

2-Days Online Workshop

on

## Industrial Robotics: Motion Planning of Robotics Systems

Registration Links

<https://cas.res.in/workshopreg.html>



Last Date of Registration: 06 April, 2022

- Duration : 2-days
- Date: 11 - 12 April, 2022
- Timing: 9 am- 3 pm
- Eligibility: B.Tech.
- Mode: offline
- Number of Seats: 30



### Contents

- ❑ Introduction to robotics
- ❑ Kinematics and dynamics of robotic systems
- ❑ Learning based energy optimal motion planning of robotic systems (industrial manipulators, biped robots)

| Day   | Session  |  |
|-------|--|--|
|       | Forenoon   | Afternoon  |
| Day 1 | Introduction to robotics: Kinematics<br>• Trajectory planning of industrial manipulator and biped robots.<br>• DH parameters<br>• Forward kinematics, and inverse kinematics<br>• Joints position, velocity, and acceleration computation<br>• Hands-on MATLAB session on above-discussed topics | Introduction to robotics: Dynamics<br>• Dynamics of robotic systems by using recursive Newton-Euler method for computation of joints torque<br>• Hands-on MATLAB session on topics discussed in this session |
| Day 2 | <b>Supervised Learning:</b><br>Classification, Regression using multilayer feed forward neural networks, MATLAB Implementation of machine learning techniques  | <b>Learning based energy optimal motion planning of robotic systems :</b><br>Dataset creation, Supervised Learning, Real-time implementation of trained neural network for generation of optimal path        |



For more information visit: [www.cas.res.in](http://www.cas.res.in)

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