NPTEL Video Course - Mechanical Engineering - NOC:Wheeled Mobile Robots

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Co-ordinating Institute - IIT - Madras, IIT - Palakkad

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Mobile Robots and Manipulators
Lecture 2 - Introduction to Locomotion and Types of Locomotion
Lecture 3 - Introduction to Mobile Robot Kinematics
Lecture 4 - Degree of Maneuverability and Types of Wheels
Lecture 5 - Kinematic Simulation of a Mobile Robot (Land-based)
Lecture 6 - Kinematic Simulation and Motion Animation of a Mobile Robot (Land-based)
Lecture 7 - A Generalized Wheel (Kinematic) Model
Lecture 8 - Examples related to the Generalized Wheel (Kinematic) Model
Lecture 9 - Holonomic and Non-holonomic Mobile Robots
Lecture 10 - Kinematic Simulation of Wheeled Mobile Robots - Part 1
Lecture 11 - Kinematic Simulation of Wheeled Mobile Robots - Part 2
Lecture 12 - Kinematic Simulation of Wheeled Mobile Robots - Part 3
Lecture 13 - Mobile Robot Dynamics - Part 1
Lecture 14 - Mobile Robot Dynamics - Part 2
Lecture 15 - Equation of Motion and Dynamic Simulation of a Mobile Robot
Lecture 16 - Dynamic Models of Wheeled Mobile Robots with Wheel Configurations
Lecture 17 - Kinematic and Dynamic Models of a Mobile base with Four-Independent Steerable Power Wheels
Lecture 18 - Sensing and Perception
Lecture 19 - Sensors and Sensing
Lecture 20 - Commonly used sensors - 1
Lecture 21 - Commonly used sensors - 2
Lecture 22 - Commonly used sensors - 3
Lecture 23 - Sensor Errors and Error modelling
Lecture 24 - Mobile Robot Localisation
Lecture 25 - Map based Localisation
Lecture 26 - Markov Localisation
Lecture 27 - Kalman Filter Localisation
Lecture 28 - SLAM
Lecture 29 - Mobile Robot Navigation

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Lecture 30 - Path Planning: Graph Construction
Lecture 31 - Graph Search Methods
Lecture 32 - Path Planning and Obstacle avoidance
Lecture 33 - Introduction to Motion Control of Mobile Robots - Part 1
Lecture 34 - Introduction to Motion Control of Mobile Robots - Part 2
Lecture 35 - Kinematic control of Land-based Mobile Robots
Lecture 36 - Simulation of Land-based Mobile Robots along with Kinematic Control - Part 1
Lecture 37 - Simulation of Land-based Mobile Robots along with Kinematic Control - Part 2
Lecture 38 - Simulation of Land-based Mobile Robots along with Kinematic Control - Part 3
Lecture 39 - Dynamic Control of Mobile Robots
Lecture 40 - Cascaded or Back-stepping Control of Mobile Robots
Lecture 41 - Modern Robotics and Challenges
Lecture 42 - Multiple Mobile Robotic Systems
Lecture 43 - Autonomous Mobile Robots and Mobile Manipulators
Lecture 44 - Legged and Hybrid Robots
Lecture 45 - Underwater and Aerial Robots
Lecture 46 - Healthcare Robots

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