048-CMC-11-03 Robotics and AI

Significance of the Program

Robotics is used to create and perform tasks that are difficult or impossible for humans to do. They can be used in a variety of industries, including manufacturing, healthcare, and transportation. One of the most common uses of robotics and automation is in manufacturing.

AI has the potential to bring about numerous positive changes in society, including enhanced productivity, improved healthcare, and increased access to education. AI-powered technologies can also help solve complex problems and make our daily lives easier and more convenient.

Career Options

Pursuing a professional course in Robotics & AI, students explore the following opportunities Robotics system Engineer, Product design Engineer, R&D Engineer, AI specialist, Project Manager to:

- Design, develop, and maintain robotic systems for various industries such as manufacturing, healthcare, and logistics.
- Work on developing and implementing AI algorithms, machine learning models, and deep learning systems for applications like natural language processing, computer vision, and data analysis.
- Work on developing and improving autonomous vehicles, drones, and other intelligent systems.

Program Objectives

- Develop a strong foundation in core principles of artificial intelligence, robotics, and related technologies,
- Acquire advanced skills in designing, developing, and implementing AI algorithms and robotic systems,
- Enable students to apply AI and robotics concepts to real-world problems and industry scenarios.

Outcomes of the Program

1. Apply spatial transformation to obtain forward and inverse kinematics.
2. Solve robot dynamics problems, generate joint trajectory for path planning.
3. Demonstrate knowledge of industrial robots, characteristics, end effectors and actuators.

4. Experiment and prepare programming concepts and provide new ideas and innovations towards research and societal issues in the field of Artificial Intelligence
5. Apply standard and advanced Artificial Intelligence based concepts, practices and strategies in order to develop sustainable products using AI-based technology to deliver a quality product for Business, Education and Training and/or E-governance.

Major Course Outline

1. Kinematics and Dynamics of robots.
2. Sensors and Effectors in robotics.
3. Control and Path planning of robots.
4. Computer vision.
5. Expert systems.
6. Machine learning, Neural networks/deep learning.