AIN SHAMS UNIVERSITY FACULTY OF ENGINEERING
MECHATRONICS ENGINEERING DEPARTMENT
Spring 2024

MDP 453: Robotics

Project Description

Introduction

Each group should model a 6-DOF manipulator by developing a URDF file on GAZEBO, to generate a trajectory to a specific goal using moveit toolbox and developing a motion planner to control the robot based on the generated trajectory. The robot motion will be visualized on RVIZ and GAZEBO. The project will be divided into 3 milestones.

1st milestone:

Each team are required to model a 6 Degree-of-Freedom (6-DOF) manipulator using URDF (Unified Robot Description Format) in the ROS (Robot Operating System) environment. The focus is on accurately representing the manipulator's physical characteristics, modifying the URDF for simulation, and integrating the robotic arm into Gazebo.

2nd milestone

Each team are required to use Moveit toolbox to plan a trajectory for your 6 DOF Manipulator giving a goal and visualize its motion on RVIZ and Gazebo

3rd milestone

Each team is tasked with utilizing a Python script to programmatically move a robotic arm to predefined positions within the Robot Operating System (ROS) environment using MoveIt and develop a Python script to print the end effector's position after the robotic arm reaches predefined positions.