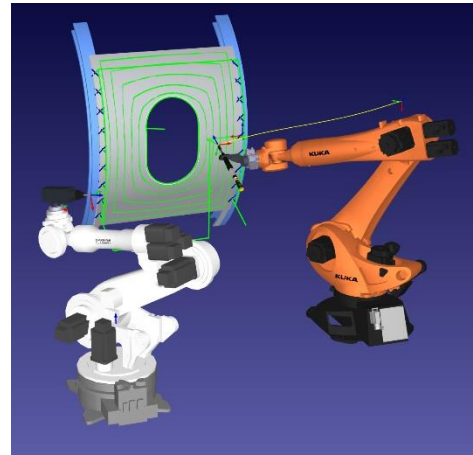


Technical Elective Course in Robotics Engineering

In **MECA 470 – Robotics Engineering**, the students will learn the fundamentals and hands-on aspects of robotics engineering with a main focus on software and hardware. This emphasis will be placed on the correct use and application of commercial software in the solution of engineering problems. The course will utilize ROS (Robot Operating System), Gazebo, CoppeliaSim, and RoboDK. The programming languages are Python -and/ or C/C++. The students will use native Linux computers (recommended), Linux VMs, or they can use AWS RoboMaker during this class. Anticipated topics include:

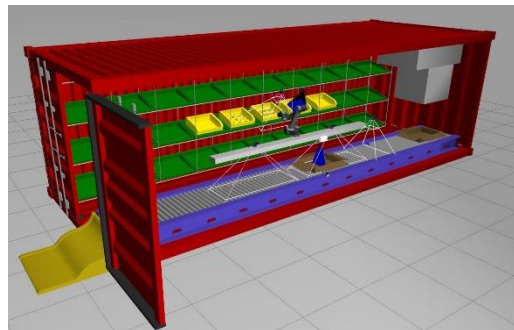
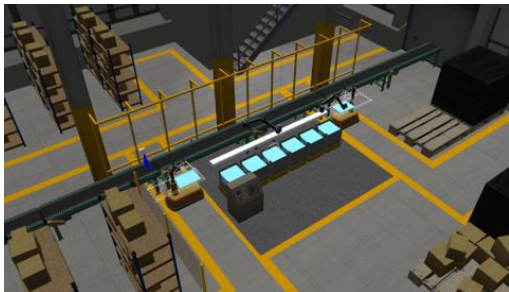
- ROS [Robot Operating System]
 - Essentials of ROS
 - Build your own robot environment
 - Autonomous Navigation (e.g., SLAM)
 - Manipulation (e.g., MoveIt)
 - Robot Vision (e.g., DexNet)
- Python, Gazebo, CoppeliaSim, and RoboDK
 - Programming with Python (from zero to hero)
 - Interfacing the robotic systems with the kinematic simulators or system's digital twin.



The course will be a mixture of lecture and supervised lab time.

The labs may involve the experimentation with the algorithms on physical and/ or simulation settings.

The students will have weekly assignments as well as a comprehensive final project (with a team competition).



For more information, contact:

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Prereqs: CSCI 111 or MECH 208, MECH 320 (co-requisite)

Course Enrollment #: 5725

Schedule:

LEC: TR 1-1:50pm;

ACT: F 2-3:50pm

