



P3-DX Mobile Robot

- Recognize that P3-DX mobile robots use a well established client-server communication architecture
- Develop a MATLAB client interface that directly communicates with Advanced Robot Control and Operations Software (ARCOS) server running on P3-DX mobile robots
- Utilize the *timer* object in MATLAB to create two essential timers—one to transmit the Pulse command packet at a specified time interval, and another to process the received Server Information Packets (SIP) data packets in a timely manner

- There is a need for an easy-to-use programming environment for engineering students to build and develop robot applications
- Robot Operating System (ROS) is powerful, but requires some degree of experience to be used to its full potential
- MATLAB is now the programming language of choice for most engineering students to analyze data and visualize experimental results with various graphical plotting tools
- It is highly desirable to have a MATLAB-based interface for students to program and conduct robot experiments

- Leverage engineering students' existing programming skills in MATLAB to study and conduct experiments in robotics
- Attract and encourage more students to the field of robotics and unmanned systems
- Offer an easy-to-use robot interface that allows students to directly control and communicate with robots using MATLAB
- Enhance students' robotics learning experience by using an integrated environment for controlling robots, analyzing experimental data, and preparing figures and plots for lab reports