# Trajectory following and planning

Description

The project involves **extending an existing real-world robotic system by incorporating trajectory following and planning**. The robot platform is equipped with two independently actuated wheels, which allow it to move. Communication between the PC and the robot is established through an Xbee module, and a camera system determines the robot's position and orientation. This **existing setup enables the control of the robot and provides feedback through the camera system**.

This bachelor project aims to **design, model, implement, and test a trajectory-following system** for a robot. The system will take a predefined trajectory as input, enabling the robot to **follow it accurately while compensating for disturbances or deviations** during movement. An optional **extension involves incorporating trajectory planning** capabilities for a given start and end point, with constraints such as specific orientations or additional intermediate waypoints.

Objectives

- Conduct a **literature review**
- **Model and verify the system** using MATLAB/Simulink
- **Conceptualize**, **model**, and **implement** a **trajectory following** and **control concept**
- **Implement and verify the trajectory planning system** in a laboratory setup
- **Extend the system to plan trajectories** for a given start-/end-point

Start: today
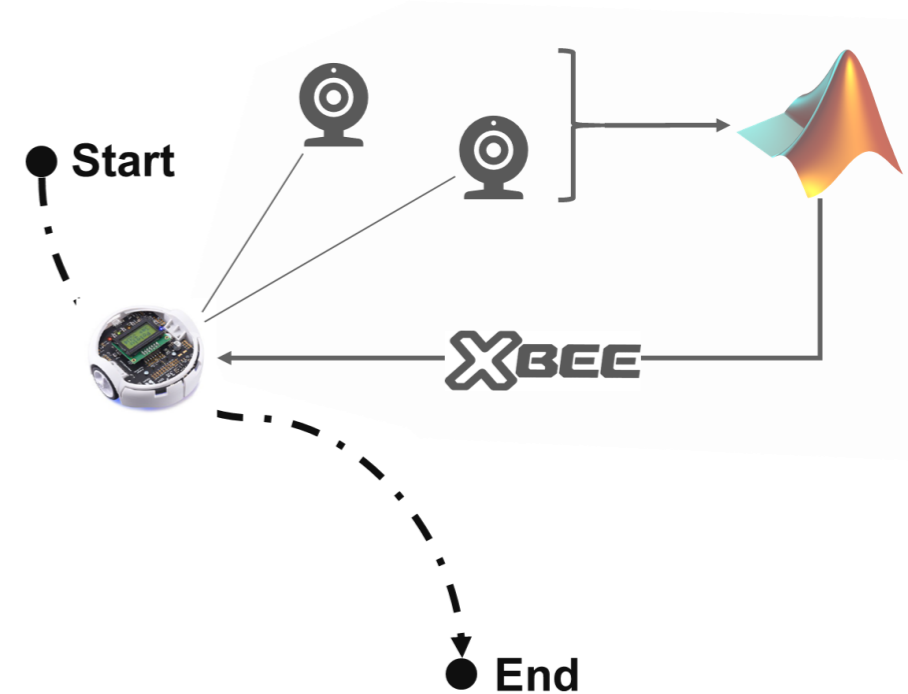
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