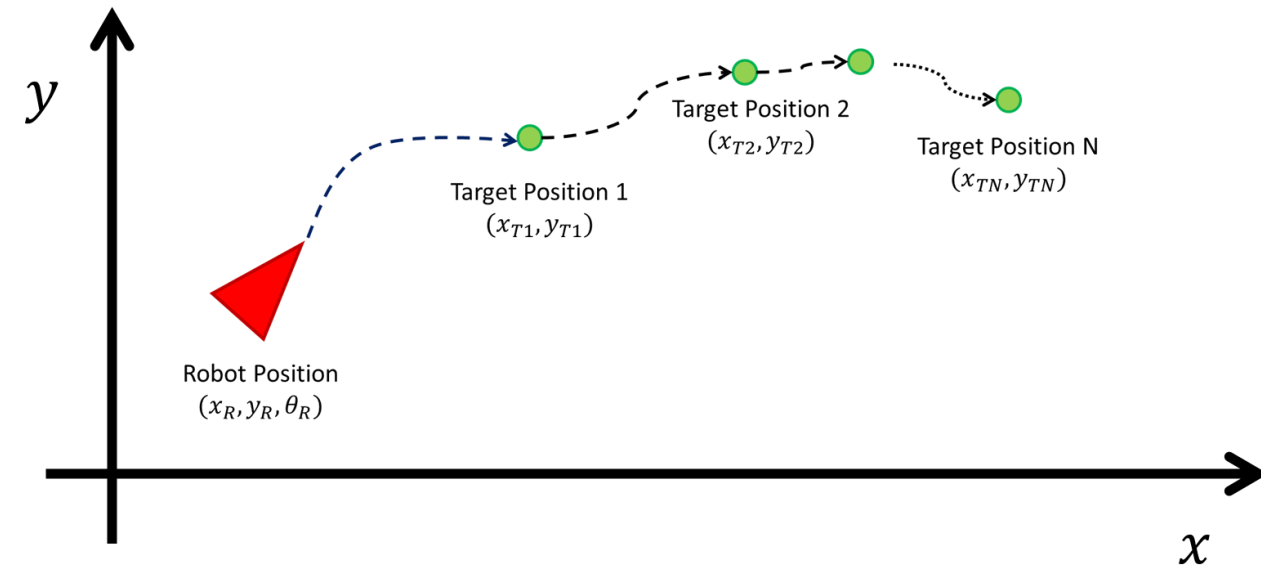




The Final Challenge

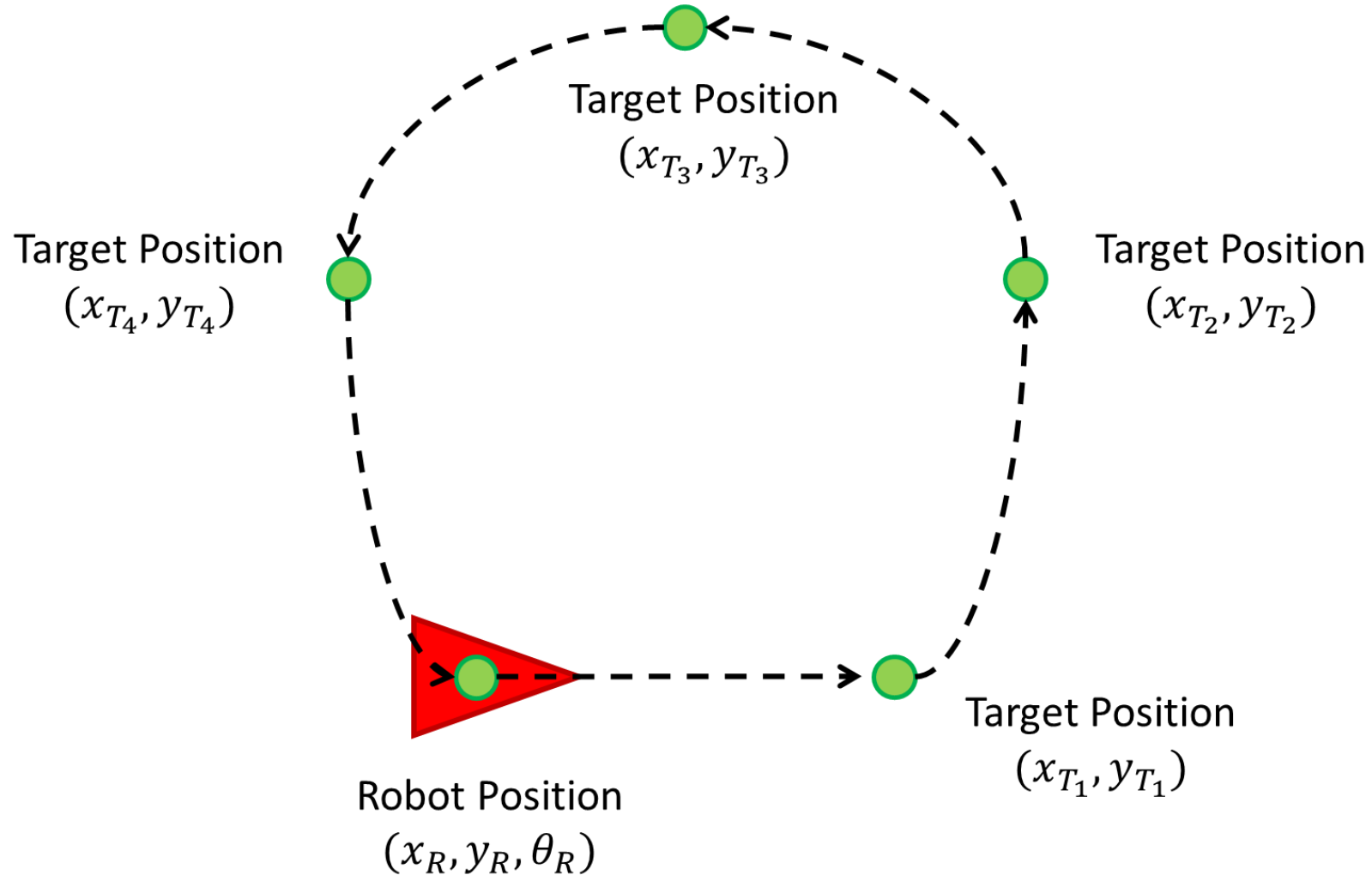


- The task consists of using a PID control to move the robot to different positions in the space using the Gazebo PuzzleBot Simulator.
- No template is given for this activity (is a challenge) except for the Gazebo Simulator. The student must create each own nodes and packages in ROS (VM or dual booting is allowed).
- The number of targets x_{TN} can be specified by each student (minimum required: 3 different positions excluding the initial position).
- The points selected by the student should resemble a geometrical shape, such as a circle, square or any other geometrical figure.
- The robot must go back to the initial position.
- The initial pose of the robot must be $[0,0,0]^T$ for $[x_r, y_r, \theta_r]^T$ respectively.
- It is encouraged, but not required, for the student to use a config file or a parameter in the launch file to establish the goal targets such that they can be changed outside the code (not hardcoded).





Example





Rules



- This is challenge **not** a class. The students are encouraged to research, improve tune explain their algorithms by themselves.
- MCR2(Manchester Robotics) Reserves the right to answer a question if it is determined that the questions contains partially or totally an answer.
- The students are welcomed to ask only about the theoretical aspect of the classed.
- No remote control or any other form of human interaction with the simulator or ROS is allowed (except at the start when launching the files).
- The robot must always remain bounded within the MCR2 Arena in Gazebo (Square).
- The track must be solved using a closed loop control.
- It is **forbidden** to use any other internet libraires with the exception of standard libraires or NumPy.
- If in doubt about libraires please ask any teaching assistant.
- Improvements to the algorithms are encouraged and may be used as long as the students provide the reasons and a detailed explanation on the improvements.
- The student must only use the simulator and tools provided by Manchester Robotics.
- All the students must be respectful towards each other and abide by the previously defined rules.