

## Multirobot formation for target enclosing

### 1. GOAL

The goal is to study the problem of multirobot formation in the application of enclosing a target in this practical exercise. The task is to program the algorithm of the enclosing formation control and the implementation of the simulation of the team of robots performing the formation control.

### 2. METHODOLOGY AND SETUP

Before starting the exercise, read carefully the complete instructions of the practice. The practical session consists of programming from scratch the formation control task. Python is recommended, but any other programming language can be used.

### 3. ENCLOSING FORMATION CONTROL

Given a set of mobile robots  $\mathbf{q}_i$  and the desired formation  $\mathbf{c}_{ij}$  around a target  $\mathbf{q}_N$ , enclosing it, define a simulation environment. Consider first a 2D space in which the robots move on the floor plane.

Implement the control law for every robot in order to perform the enclosing task.

Consider as enclosing formation different geometric patterns such as square, triangle circle, etc.

### 4. SESSION REPORT

As a result of this practical session, the final developed code will be submitted through the ADD (<https://moodle.unizar.es/add/>).