

# **Coordinated and Collective Movements**

## **Distributed Intelligent Systems**

17.10.2017

# Outline

## 1- Reynolds flocking

- (a) No specific formation geometry
- (b) No leader (usually a migration rule)

## 2- Robust formation control

- (a) Specific formation geometry
- (b) Leader to move the formation

## 3- graph-based formation control

# Reynolds flocking in Webots

- You will study the impact of various parameters on the flock.
- Three different localization systems:
  - Absolute and centralized localization.
  - Odometry (motion model propagation).
  - Range and bearing.
- The performance is just an estimate (not very reliable).

# Robust formation control in Webots

- The leader is controlled by your arrow-keys.
- Note the differences between flocking and formation.

# Graph-based formation in Matlab

- No leader in this case.
- Try to understand how the Laplacian controller works.
- Play with the parameters and note their effects.

# Notes

- The lab is a bit long, it may take time (even more than 3 hours), don't get stuck.
- **Remember to fill the feedback form**