Robot Tracker

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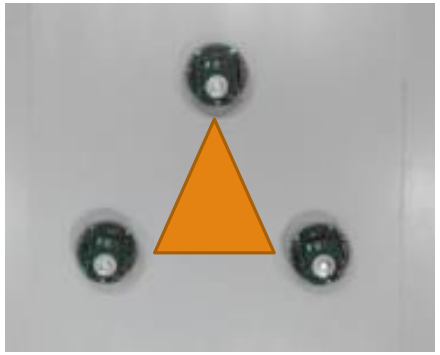
Objective

- To track robots on a certain area.

Justification

- Research projects (Control systems)
  - Formation maneuvers [1]



- How to track the positions of the robots?
  - “Dead-reckoning” [2]
  - GPS
  - **Camera tracking**

Goals

- Camera adjustment (Detect a known distance, e.g. one of the robots)
- Detect the robots (RGB -> HSV or a QR code , binarization, labelling)
- Give a feedback of their positions (Bluetooth communication)
- GUI
- Make a comparison between given and real trajectories

Tools

Hardware

- Logitech Webcam C525 [3]
- epuck Robot [4]

Software

- Python
- OpenCV
- TkInter or pygame

python™

OpenCV

Project schedule

No	Activities	Week 1 (March 8-14)	Week 2 (March 15-21)	Week 3 (March 22-28)	Week 4 (March 29 – April 4)	Week 5 (April 5 - 11)	Week 6 (April 12 - 18)	Week 7 (April 19 - 25)	Week 8 (April 26 - May 2)
1	Detect and label things								
2	GUI								
3	Communication tests								
4	Algorithm tests with hardware								
5	Final tests with outputs								
6	Improvements								

References

[1] Hernández Alemán, R., Salas Peña, O., & De León Morales, J. (2013). FORMATION MANEUVERS VIA ADAPTIVE SUPER TWISTING APPROACH. *PHYSCON, 2014*. Retrieved March 5, 2015.

[2] Enabling your robot to keep track of its position. (2005, January 1). Retrieved March 5, 2015.

[3] Logitech HD Webcam C525. (2015, January 1). Retrieved March 5, 2015, from http://www.logitech.com/es-mx/product/7794?crid=34

[4] Mondada, F., Bonani, M., Raemy, X., Pugh, J., Cianci, C., Klaptocz, A., Magnenat, S., Zufferey, J.-C., Floreano, D. and Martinoli, A. (2009) The e-puck, a Robot Designed for Education in Engineering. Proceedings of the 9th Conference on Autonomous Robot Systems and Competitions, 1(1) pp. 59-65.