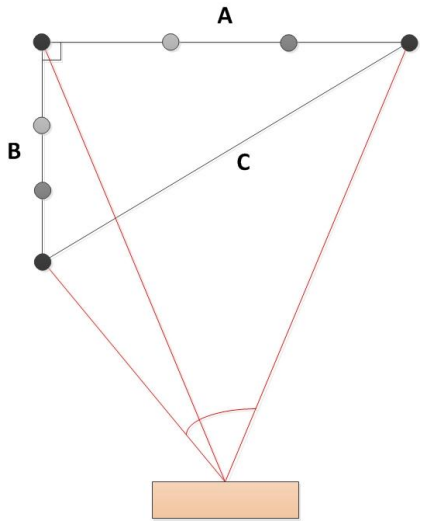
# Final design presentation

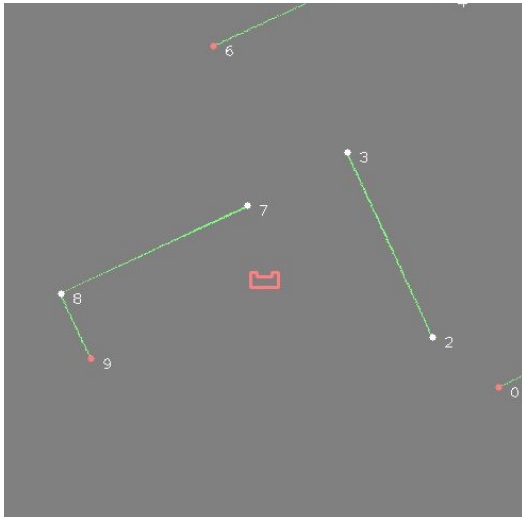
Embedded Motion Control group 4

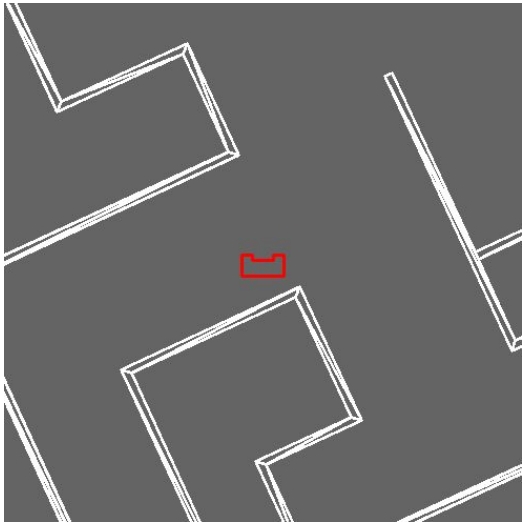
# Contents

# World model

- After corridor competition, parameters tuned
- Eventually not used in strategy
- Nodes used for door recognition
- Node datatype:
  - ID
  - Type
  - Location
  - Connections
  - LRFindex



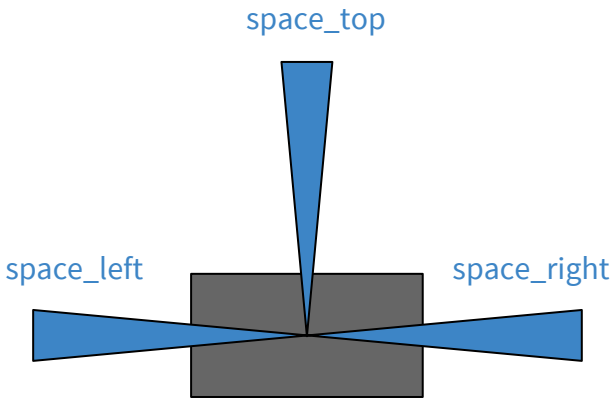



# Maze solving algorithm: Pledge

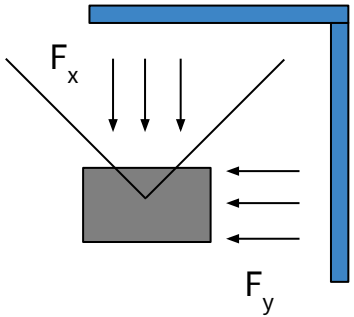
Implemented using just 7 cases:

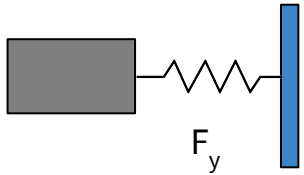
- If driving in preferred direction (counter = 0)
  - If space_top: **go straight in preferred direction**
  - If !space_top & space_left: **rotate 90° left**
  - If !space_top & !space_left & !space_right: **rotate 180° left**
- Else
  - If space_right: **rotate 90° right**
  - If !space_right & space_top: **go straight**
  - If !space_right & !space_top & space_left: **rotate 90° left**
  - If !space_right & !space_top & !space_left: **rotate 180° left**

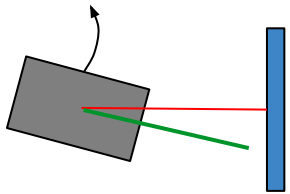


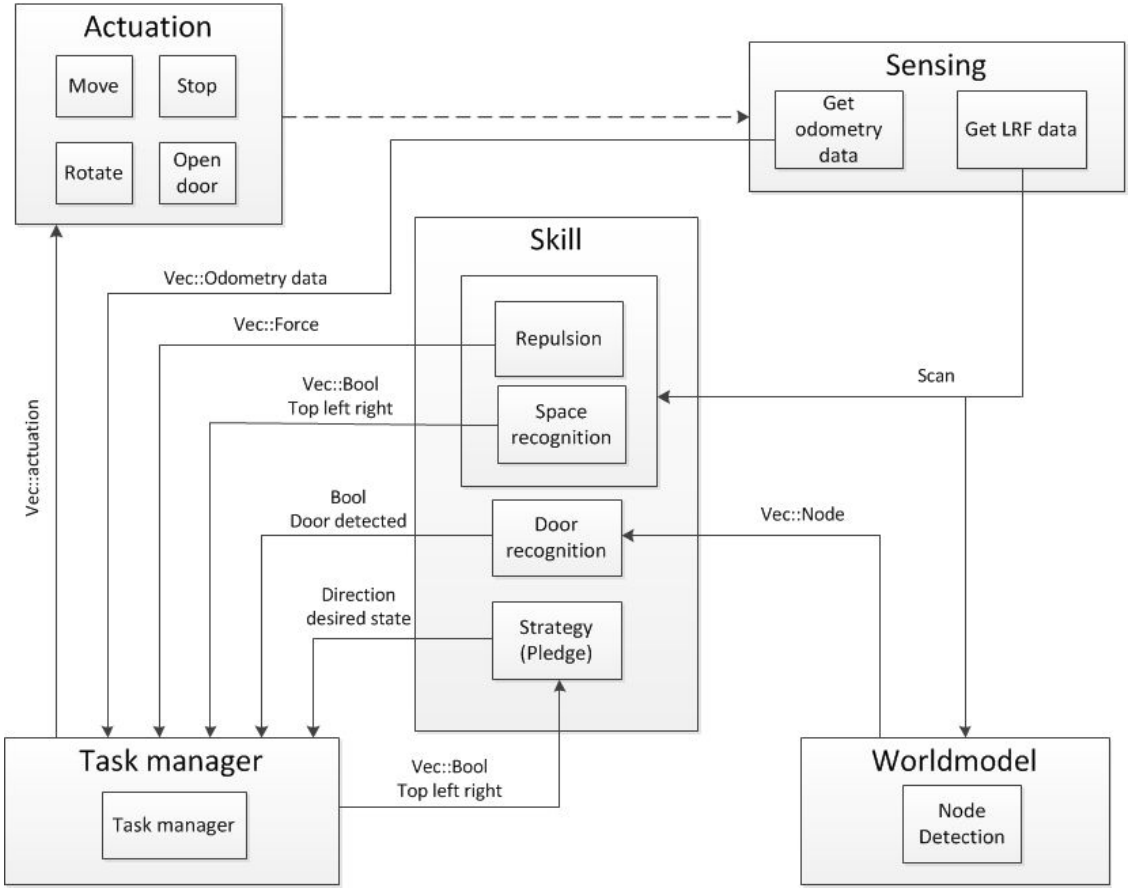
# Repulsion & wall following

- Repulsion and attraction forces
  - Attraction point in front of PICO
  - Repulsion force determined by environment
  - Keeps distance from obstacles
- Virtual spring to the wall
  - Too far away from the wall? Get closer
- Keep closest point to the right from PICO at 90 degrees






# Software architecture

# Conclusion

- Pledge implemented and working
- Door recognition working
- Integration today first version

# Planning

- Recognize doors in dead ends
- Work on documentation
- Test some more scenarios with doors
- Finetuning
- Make 2 versions
  - Safe version
  - Fullspeed version

# Thank you.