# Assignment 1


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# Birds Eye View of Assignments

- Assign 1 – Simple Reactive Robot + article
- Assign 2 – Moodle Quiz
- *"Contract" for Assign3 and Assign4*
- Assign3 – Half-Way Project
  Assign4 –
  - Code freeze (demonstration of project) | features
  - Article | results
  - Oral presentation | video

*See plan in Moodle (a plan is a plan…)*

# Rules & 2023/24

- M.EIC – groups of 3 or 4 (more work)
- Doctoral programs – work alone
- Delivery date – October 17 (Moodle before class)
  - Self Register in Moodle's groups

# Assignment #1
# Simple Reactive Robot + Article

***Deliverables:***

1. ***Demonstration + Source code*** *of the developed agent (code, features, readme, etc.)*

2. ***Article***
   *(very minimal SoA, results, discussion, etc)*
   *[NOT a tech report]*

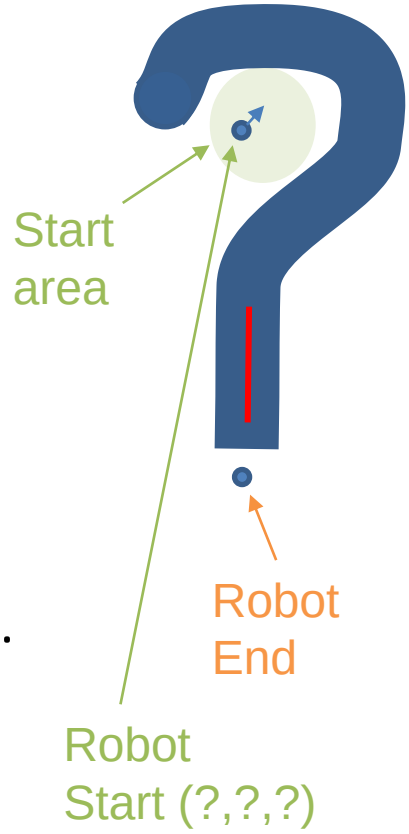
# Assignment #1
# Regarding Robot

*(Start thinking about final project…)*

- **Design and test a (simple) REACTIVE robot under ROS**
  - 2D X,Y, Theta
  - Must have simple architecture (sensors, etc)
  - Can NOT have memory
  - Can have a general, undetailed idea of the map
  - Can be subsumption architecture

# Assignment 1 – Reactive Robot

- **Broad Goal:** 2D Robot reactively follows wall of a “room”
- **Robot:** Round, differential locomotion
- **Environment:** “?”question mark shaped, strait line below, imperfect circle above, circle ends in round shape, bottom is strait and edgy shape
- **Start pose:** Random inside the roundish part
- **Behaviour**: Wanders until wall, follows wall until…
- **End position**: Ends at the rectangular sharp tip
- **Sensors, actuators, speeds:** No restrictions!
- **Tech:** Any, but must be ROS robot
- **Results for article**:
  Loop time, travelled path, performance,
  discuss stuck robot, control, performance improvement...
- **Extra Merit (well written article and):**
  Randomness; limited accel. and angular vel (ω); results table with loop time and [accel, ang_vel, directions, …], inside / outside of map



# Assignment #1
# Regarding Article

*(Start thinking about final project…)*

- **Write the article with:**
  - **Sample structure:** Abstract; Intro; (minimal) SoA; Robot's implementation and Architecture (control law); Experiments; Results and discussion; Conclusions and Future Work; Acknowledgments; References
  - **Template:** https://www.ieee.org/conferences/publishing/templates.html
  - (?) Target ICARSC '24
    - Similar to last years, IEEE template

# Reference material: Regarding Robotics

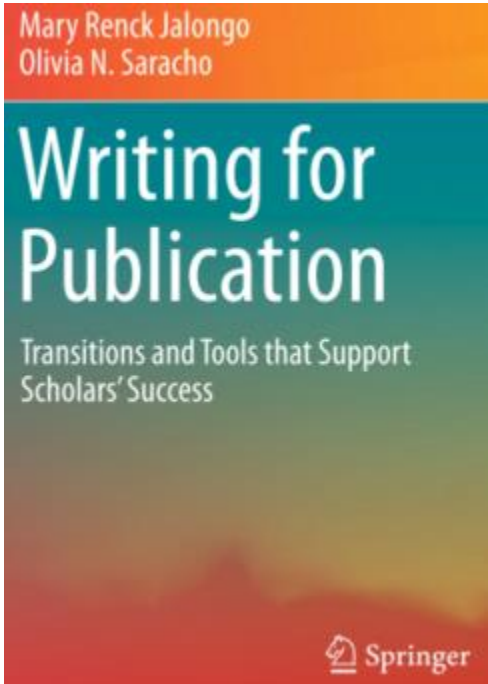
***Recommended Readings:***

- *"A Robust Layered Control System for a Mobile Robot", Rodney A. Brooks, IEEE*
- *Transactions on Robotics and Automation, 2(1), pages 14-23, April 1986.*
- *Part I – Robotic Paradigms of An Introduction to AI Robotics, Robin R. Murphy, Bradford*
- *Book, MIT Press, Cambridge, Massachussets, London England, 2000. ISBN:0-262-13383-0*
- *Behavior-Based Robotics, Ronald C. Arkin, MIT Press, 1998, ISBN 0-262-01165-4*

# Reference material: Regarding the Article

***Recommended Readings:***

- https://xpertscientific.com/style-guide/
- https://www.springer.com/series/13812



# Assignment #1
# CheckList before delivery

- **Deliverable 1 - Code:**
  - ZIP the source code of the developed agent; include **readme.txt** stating: directory structure; requirements (versions, etc); how to compile and how to execute
- **Deliverable 2 - Article:**
  - "Scientific" paper 3/4 pages - English language
  - Template - Standard A4 IEEE guidelines: http://www.ieee.org/conferences_events/conferences/publishing/templates.html
  - Submissions are NON-BLIND, that is, all author information should be explicit
  - Use formal references (as in template)

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