Intelligent Robotics

Assignment 1 - 2021/22

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Birds Eye View of Assignments

- Assign 1 – Simple Reactive Robot + article

- *"Contract" for Assign3 and Assign4*

- Assign3 – Half-Way Project
  Assign4 –
  Code freeze (demonstration of project) | features
- Article | results
- Oral presentation | video

Assignment #1
Simple Reactive Robot + Article

Deliverables:

1. ***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
Regarding Robot

Broad Goal: 2D Robot reactively follows wall, “Roomba” on a “living room”

Robot: round, differential locomotion

“Wall”: Open B shaped

Sensors, actuators, speeds: No restrictions!

Results for article:
loop time, travelled path, performance, discuss stuck robot

Extra Merit (well written article and):
Randomness, wanders until find wall; limited accel. and angular vel (ω); table with loop time and [thickness, accel, ang_vel, directions]

Assignment #1
Regarding Robot

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*

Assignment #1
Regarding Article

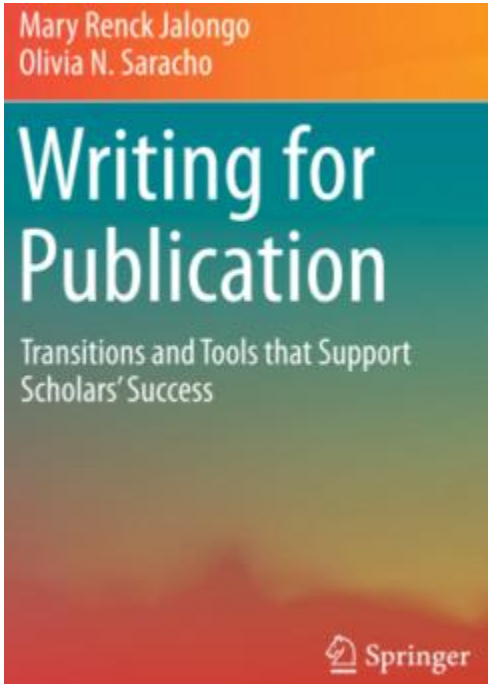
(Start thinking about final project…)

- **Write the article with:**
  - **Sample structure:** Abstract; Intro; (minimal) SoA; Robot's implementation and Architecture; Experiments; Results and discussion; Conclusions and Future Work; Acknowledgments; References
  - **Template:** https://www.ieee.org/conferences/publishing/templates.html
  - (?) Target ICARSC '22 – Santa Maria da Feira
    - https://festivalnacionalrobotica.pt/icarsc/
    - Similar to last years, example: http://robotica2018.festivalrobotica.pt/pt/icarsc/papers-submission

Assignment #1
Regarding 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)

Intlg. Robotics - Assignment 1

End… ☺

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