

Robotics

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Contents



Chapter 1.
Representing Position
and Orientation



Chapter 2. Image
Formation



Chapter 3. Control



Chapter 4.
Localization and
Mapping



Chapter 5. Navigation

Grading



Homeworks: 20%



Mid-term (project): 30%



Final term (project): 50%



MS Teams

tvk1mis

Peter Corke
Witold Jachimczyk
Remo Pillat

Robotics, Vision and Control

FUNDAMENTAL
ALGORITHMS
IN MATLAB®

Corke, Peter I., Witold Jachimczyk, and Remo Pillat. *Robotics, vision and control: fundamental algorithms in MATLAB*. 3rd edition.

- *Tell me and I will forget.
Show me and I will remember.
Involve me and I will understand.*
– Chinese proverb
- *Simple things should be simple,
complex things should be possible.*
– Alan Kay

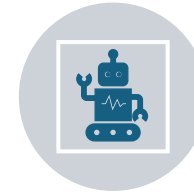
About the course



the software tools used in this course aim to reduce complexity for the learner.



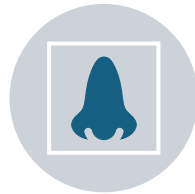
allow the learner to work with real problems, not just trivial examples.



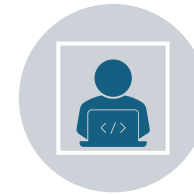
a cohesive narrative that covers robotics and computer vision – both separately and together.



show how complex problems can be decomposed and solved.



consider the course as a grand tasting menu.



software is a first-class citizen in this course.



instant gratification in just a couple of lines of MATLAB code.



this course provides a complementary approach.

Toolbox RVC3-MatLab

- Github:

<https://github.com/petercorke/RVC3-MATLAB>

The screenshot shows the GitHub repository page for `petercorke/RVC3-MATLAB`. The repository is public and has 15 forks and 78 stars. The main branch is selected. The file list includes `.github`, `book`, `doc`, `resources/project`, `test`, `toolbox`, `.gitattributes`, `.gitignore`, `LICENSE`, `README.md`, and `rvc3setup.prj`. The README section is visible, titled "Robotics, Vision & Control: 3rd edition in MATLAB (2023)". The repository is licensed under MIT and has a code coverage of 8%.

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petercorke / RVC3-MATLAB Public

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main 1 Branch 1 Tags

Go to file Code

About

New toolbox, data and examples for Robotics, Vision & Control: 3rd edition in MATLAB

Readme MIT license Activity 78 stars 7 watching 15 forks Report repository

Releases 1 tags

Packages No packages published

Contributors 3

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thewitek Wittek Jachimczyk

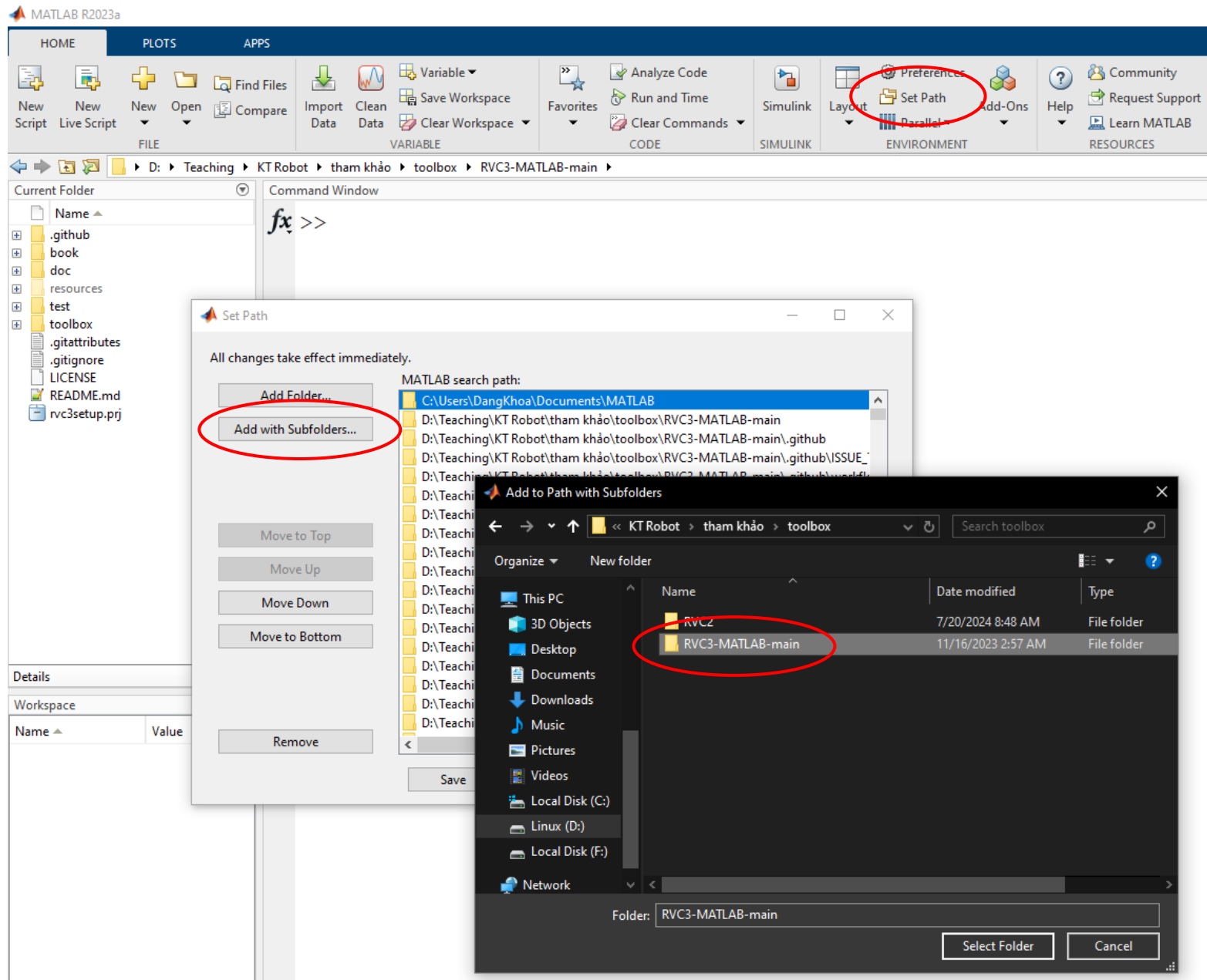
Install GStreamer + print out ver again 7c7989c · 8 months ago 326 Commits

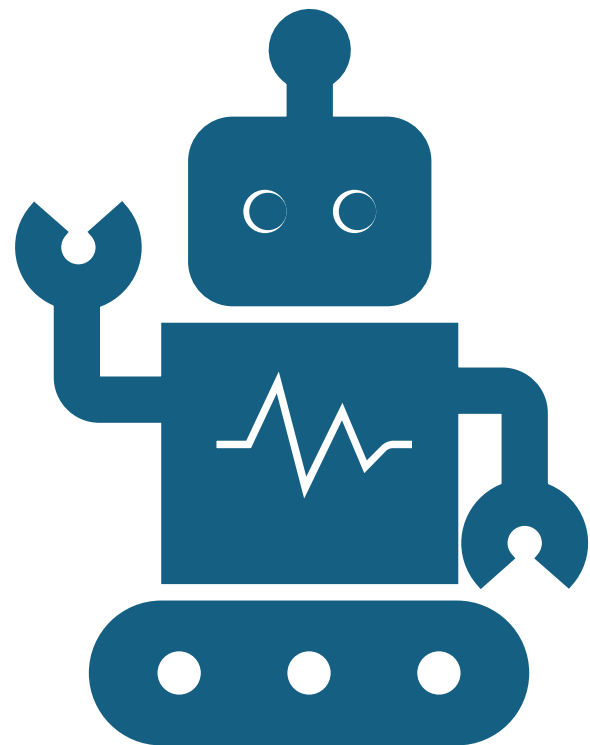
.github	Install GStreamer + print out ver again	8 months ago
book	Fix 2 test failures (linespec validation + non-existing variable...	8 months ago
doc	add QR code image	last year
resources/project	Added all unit tests to MATLAB project. These should now ru...	last year
test	Disabling chapter 14 for now to avoid test crashes	8 months ago
toolbox	Fix 2 test failures (linespec validation + non-existing variable...	8 months ago
.gitattributes	MATLAB project files for setting toolbox paths.	2 years ago
.gitignore	Never commit files that are downloaded by user	last year
LICENSE	Initial commit	2 years ago
README.md	Update README.md	last year
rvc3setup.prj	Moving to single-file project to reduce Git clone time.	last year

README MIT license

Robotics, Vision & Control: 3rd edition in MATLAB (2023)

codecov 8% License MIT Maintained? yes Status 77

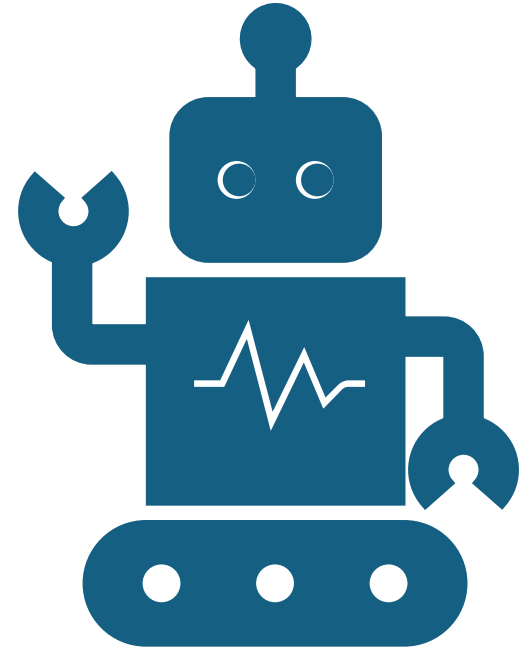


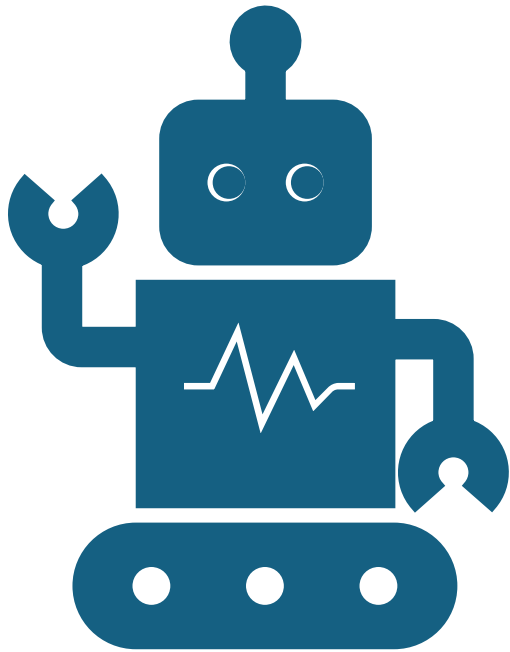


What is a robot?

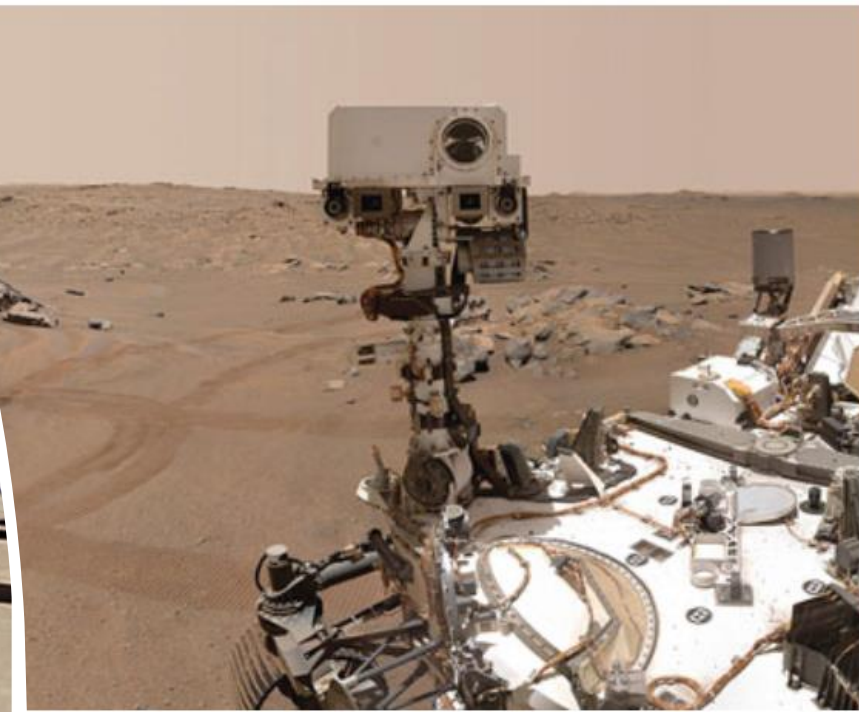
*I can't define a robot, but I know
one when I see one.*

– Joseph Engelberger





*a goal-oriented machine that can
sense, plan, and act.*



Robotic Vision



Computer Vision





Ethical Considerations