

youBot Simulation in ROS Noetic

Embedded Robotics SS2020

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6. Juli 2020



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Agenda

Motivation

Material und Methoden

Vorgehen

Demonstration

Ausblick

Quellen



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Motivation

- ▶ Ubuntu Focal 20.04
- ▶ ROS Noetic
- ▶ Python3



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Material und Methoden

- ▶ ROS Noetic
- ▶ bestehende Pakete
 - ▶ EMR Repository
 - ▶ youBot Repositories
 - ▶ Dependencies
- ▶ MatLab
- ▶ VS Code (ROS, URDF, Python Extensions)
- ▶ git & GitHub



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Vorgehen

- ▶ Ubuntu 20.04
- ▶ ROS Noetic
- ▶ EMR Repository
- ▶ youBot Repositories
- ▶ Fehlersuche
- ▶ Installationsskripte



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Fehlende Dependencies

- ▶ PR2_msgs
- ▶ scan_tools
- ▶ slam_gmapping
- ▶ hokuyo_node
- ▶ MoveIt



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**Repos blocked by
other repos
Noetic**

all, released, unreleased, blocked, releasable, releasable and blocking, releasable and not blocking, metapackages

Page was generated:
an hour ago

showing 1 of 694 total

Repository	Version	# blocking release	Blocking repos	Maintainers of blocks	# recursively blocked	# directly blocked	Directly blocked repos
movelt	Not released	4	moveit_msgs moveit_resources orocos_kinematics_dyn... srdfdom	moveit_msgs: Dave Coleman Isaac I. Y. Saito Michael Ferguson Michael Goerner Robert Haschke moveit_resources: Dave Coleman orocos_kinematics_dyn... Ruben Smits srdfdom: Movelt Release Team	43	24	abb cob_manipulation exotica fetch_gazebo fetch_ros fsrobo_r industrial_core jsk_pr2eus jsk_recognition moveit_opw_kinematics... moveit_pr2 moveit_sim_controller moveit_visual_tools open_manipulator open_manipulator_with... panda_moveit_config pilz_industrial_motion pilz_robots pr2_kinematics robot_body_filter rtmros_hironx rtmros_nextage seed_r7_ros_pkg trac_ik

http://repositories.ros.org/status_page/blocked_releases_noetic.html?q=id%3D%22movelt%22&s=6&r=1



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Deprecated Syntax & Dependencies

- ▶ `xacro.py` -> `xacro`
- ▶ `state_publisher` -> `robot_state_publisher`
- ▶ `absolute` includes anpassen für `catkin_make`



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Repositories

[youbot_noetic_install](#)

Shellscripts to setup ROS Noetic and youbot

● Shell Updated 16 hours ago

[youbot_simulation](#)

Forked from mas-group/youbot_simulation

Packages to run the KUKA youBot in the Gazebo simulation with ROS

● C++ 🐙 29 Updated 16 hours ago

[emr](#)

Forked from ProfJust/emr

Software zum Modul EMR Embedded Robotics SS20

● MATLAB 🐙 1 Updated 18 hours ago

[youbot_description](#)

Forked from mas-group/youbot_description

Robot descriptions in form of URDF files and meshes

● CMake 🐙 39 Updated 22 hours ago

[youbot_driver_ros_interface](#)

Forked from youbot/youbot_driver_ros_interface

Interface classes for ROS to the youBot driver.

● C++ 🐙 34 Updated 3 days ago

[youbot_navigation](#)

Forked from youbot/youbot_navigation

The ROS navigation stack configured for the KUKA youBot.

● C++ 🐙 23 Updated 3 days ago

[pr2_common](#)

Forked from PR2/pr2_common

● CMake 🐙 71 Updated 21 days ago



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Änderungen

- ▶ youbot_description und youbot_simulation von MAS-Group
- ▶ gazebo_ros_controller mit PID-Werten (in yaml)
- ▶ dummy base_link ohne Inertia (in URDF)



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PATH setzen:

Home -> Environment -> Set Path -> "Add with Subfolders"



The screenshot shows a text editor window titled 'matlab.desktop' with the file path '~/.Desktop'. The editor contains the following code:

```
1 [Desktop Entry]
2 Version=1.0
3 Type=Application
4 Name=MATLAB R2020a
5 Terminal=false
6 Path=/home/youser/Downloads
7 Exec=env MESA_LOADER_DRIVER_OVERRIDE=i965 /home/youser/MATLAB/R2020a/bin/glnxa64/MATLAB -desktop
8 Icon=/home/youser/MATLAB/R2020a/bin/glnxa64/cef_resources/matlab_icon.png
```

The status bar at the bottom indicates the file is '.desktop', the tab width is 8, the cursor is at line 5, column 15, and the encoding is UTF-8.

MatLab Desktopverknüpfung



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Fehlermeldung MatLab R2020a unter Ubuntu 20.04

```

Command Window
New to MATLAB? See resources for Getting Started.

com.jogamp.opengl.GLException: X11GLXDrawableFactory - Could not initialize shared resources for X11GraphicsDevice[type .x11, connection :0, unitID 0, han
    at jogamp.opengl.x11.glx.X11GLXDrawableFactory$SharedResourceImplementation.createSharedResource(X11GLXDrawableFactory.java:326)
    at jogamp.opengl.SharedResourceRunner.run(SharedResourceRunner.java:297)
    at java.lang.Thread.run(Thread.java:748)
Caused by: com.jogamp.opengl.GLException: main-SharedResourceRunner: Unable to create temp OpenGL context(1)
    at jogamp.opengl.x11.glx.X11GLXContext.createImpl(X11GLXContext.java:368)
    at jogamp.opengl.GLContextImpl.makeCurrentWithinLock(GLContextImpl.java:759)
    at jogamp.opengl.GLContextImpl.makeCurrent(GLContextImpl.java:642)
    at jogamp.opengl.GLContextImpl.makeCurrent(GLContextImpl.java:580)
    at jogamp.opengl.x11.glx.X11GLXDrawableFactory$SharedResourceImplementation.createSharedResource(X11GLXDrawableFactory.java:297)
    ... 2 more
>> opengl info

    Version: ''
    Vendor: ''
    Renderer: 'None'
    RenderDriverVersion: ''
    RenderDriverReleaseDate: ''
    MaxTextureSize: 0
    Visual: ''
    Software: 1
    HardwareSupportLevel: 'none'
    SupportsGraphicsSmoothing: 0
    SupportsDepthPeelTransparency: 0
    SupportsAlignVertexCenters: 0
    Extensions: {}
    MaxFrameBufferSize: 0
  
```

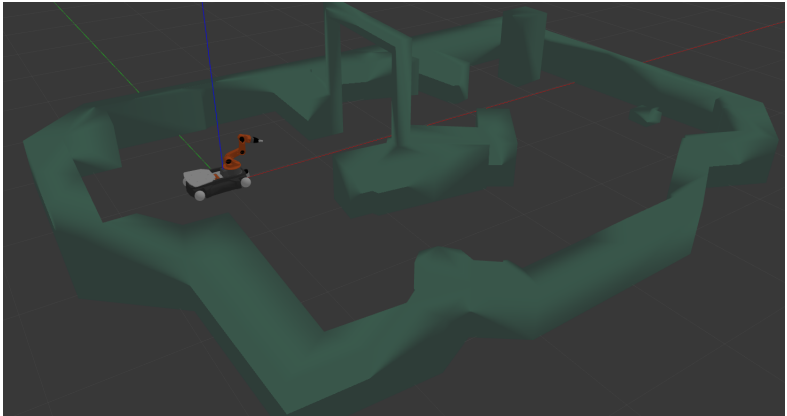
MESA_LOADER_DRIVER_OVERRIDE=i965



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Demonstration



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Anpassungen für die echte Hardware:

- ▶ `youbot_driver_ros_interface` angepasst
- ▶ neue Launchfile mit `urg_node` und `teleopt`
- ▶ `ip -d link -> Namen der Ethernetverbindung in youbot_driver youbot_ethercat.cfg` eintragen



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<https://wiki.ros.org/noetic>

<https://ubuntu.com/>

<https://github.com/ProfJust/emr>

<https://moodle.w-hs.de/course/view.php?id=713>

<https://github.com/youbot>

<https://github.com/mas-group>



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Fragen?

Vielen Dank für Ihre Aufmerksamkeit!



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