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Introduction to Robotics (SS2013)

Assignment #3

Due: 25.04.2014

Defining DH-Parameters for a "real" robot and Simulation

Task 3.1:

Try to define the DH parameters for the yellow Toy robot. (accuracy of 1 cm should be sufficient)

Task 3.2:

Download the setup.sh file from the lectures website. examine that file, and if you consider it not to delete your home folder... ..open three shells, in each do

```
source path/to/setup.sh
```

1st shell:

```
roscore
```

2nd shell:

remoteui (this is a remote user interface for GStreamer pipelines, here it is used for sending raw coordinate transforms)

Download and modify the j4man.sh file, and enter the DH parameters for each joint (you can omit zero parameters completely):

In the Command field, enter the path to the text file:

Press play, you should see some controls for the joints:

3rd shell:

```
roslaunch rviz rviz
```

set fixed frame to "world" Press the Add-button (bottom left), choose rviz/TF The coordinate systems should be displayed, play around with the sliders

Task 3.3: Gimbal Lock:

When manually defining Euler angle, some combinations lead to so called Gimbal Lock situations - you seem to lose one degree of freedom. search for GimbalLock on youtube and watch the 5 min video.

Try to show a Gimbal Lock situation with the sliders.

Download the simpletran.sh file and run it in remoteui (it may be necessary to restart RViz)