

# *Mimika ruchu rąk ludzkich przy pomocy robota humanoidalnego*

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## ROS WITH GAZEBO

<http://wiki.ros.org/melodic/Installation/Ubuntu>

- MAKE CATKIN WORKSPACE

```
1. mkdir catkin_ws
2. cd catkin_ws
3. mkdir src
```

## INSTALL PR2

[http://wiki.ros.org/pr2\\_simulator/Installation](http://wiki.ros.org/pr2_simulator/Installation)

### OR COPY AND PASTE TO

- [https://github.com/PR2/pr2\\_simulator?fbclid=IwAR0XcmK1EKeZSED3--Cf6FOrUlj6BJWOUDhalkoGQSJkJvj6J79y8fphFzI](https://github.com/PR2/pr2_simulator?fbclid=IwAR0XcmK1EKeZSED3--Cf6FOrUlj6BJWOUDhalkoGQSJkJvj6J79y8fphFzI)
  - '/catkin\_ws/src'

### AND USE

- `catkin_make` **TO BUILD**

### TRY LAUNCH

- `roslaunch pr2_gazebo pr2_empty_world.launch`

## INTEL REALSENSE SDK WITH ROS NODE

<https://github.com/IntelRealSense/realsense-ros?fbclid=IwAR0Jh3s8qtIMDUmbIJm1SM-zqHW6pmQpECQgKS0EI67r4t2ogjTbegBnQfY>

### TRY LAUNCH

- `roslaunch realsense2_camera rs_camera.launch`

## IMAGE PROCESSING

1. `sudo install pip3`
2. `pip3 install tensorflow==1.14` **CPU**

**OR**

2.1 `pip3 install tensorflow-gpu==1.14` **ONLY FOR NVIDIA GPU**

3. `pip3 install python==3.6`
4. `pip3 install scipy`
5. `pip3 install pyyaml`
6. `pip3 install opencv-python`

## USER MANUAL

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### Launching code with Intel RealSense D435i camera:

1. Download folder `SZUM_LAB`
2. Plug camera into computer
3. Launch PR2 in gazebo with ROS
  - `roslaunch pr2_gazebo pr2_empty_world.launch`
4. Launch RealSense with ROS
  - `roslaunch realsense2_camera rs_camera.launch`
5. Try
  - `rosinit` in **MATLAB**
6. Open `SZUM_LAB` directory to `posenet-python` and run terminal there
7. If there are any files in images and output folder or output folder - delete them
8. Run our Python script using command: `python3 custom_demo.py`
9. Run matlab script "camera.m" in MATLAB
10. Sit in front of camera in distance of about 3 meters and freeze your hands in chosen pose.

### Launching second time:

1. Run matlab before Python code (matlab script will wait for Python response) to delete previous data\*
2. Run Python script (it checks for newer image id and needs restart)

Hard disk is used for data exchange between Matlab and Python script

*trash should be emptied regularly!!!!*

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