# Getting started with python-urx

## 1 SETUP

### 1.1 UR5 ROBOT
- Start up UR5 to the main screen.
- Note the robot IP address by clicking "About" on the Polyscope main page.
- To use the gripper, <u>it must first be activated</u>
  - o Program Robot > Installation > Gripper > Activate

#### 1.1.1 UR5e robot
- In addition to the above steps, ensure the "Remote Control" option is selected from the top-right corner.

### 1.2 WORKSTATION
- Install Python 3 (and pip if necessary)
- Install numpy package
  ```
  >> pip install numpy
  ```
- Download `urx` (NOTE: the package available from pip appears to be outdated and cause unexpected errors to be thrown; please download the package directly from GitHub at https://github.com/SintefManufacturing/python-urx)
- Ensure the 'urx' folder is in your Python working directory
- Connect to the robot router.

## 2 TEST CODE

### 2.1 MOVING THE ARM
- Run the move_arm.py script
  ```
  >> python move_arm.py
  ```

### 2.2 USING THE GRIPPER (ENSURE GRIPPER HAS BEEN ACTIVATED AS IN SECT. 1.1)
- Run the gripper.py script
  ```
  >> python gripper.py
  ```

## 3 CAPTURING AN IMAGE FROM THE CAMERA

The images captured by the UR5 camera can be accessed from:

```
http://< UR5 IP address >:4242/current.jpg?annotations=off
```

To test this, type the above address into a browser while connected to a robot router.

# 4 REFERENCES

- Python-urx Git repository:
  https://github.com/SintefManufacturing/python-urx
- https://dof.robotiq.com/discussion/275/wrist-camera-live-image