Vision Project

Release 1.0

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Contents

This project is to have robots help people with low vision use a magnifying glass more regularly. It is a collaboration between UCLA and USC.

CHAPTER 1

Setup

There are two ways to setup this project. The easiest and cleanest is to use a Docker container. However, if you need the interaction to run upon bootup, you are probably better off setting up this project on your local machine (not in a Docker container). Below are instructions for both of these methods.

1.1 Using the Docker Container

To run a Docker container, go into the `docker` directory in this project's repository and run the `run` script. Note that you can p

- `./run.sh run` will start the vision project's interaction
- **`./run.sh terminal` will give you access to a terminal inside the Docker container. Note, if you want additional te**
    - This is probably the best option if you are accessing QT remotely or using a non Linux operating system, as graphics won't work.
- `./run.sh popup` creates a new terminal window from which you can launch other programs, such as PyCharm or RViz.

Note: If you have `make` installed, you can test that your Docker image is setup correctly and that you have valid Amazon Web Services (AWS) credentials by running `make test_docker`. Be aware that this script assumes that you have the following environmental variables set: `AWS_SECRET_KEY_ID` and `AWS_SECRET_KEY`. If you don't have these set, add the following lines to the end of your `~/.bashrc` and then source your `~/.bashrc`: `source ~/.bashrc`.

```
export AWS_SECRET_KEY_ID="<my secret key id>"
export AWS_SECRET_KEY="<my secret key>"
```

1.2 In Your Current Environment

To run the interaction on your local machine, you'll need to install several packages. If you have `make` installed (`sudo apt update; sudo apt install -y make`, on Ubuntu 16.04), you install the necessary dependencies with `make install_deps`. If you don't have `make` installed, you can also access the script with `./docker/scripts/install_deps.sh`.

Once you have the dependencies installed, you'll need to clone several repositories into the `src` folder in your catkin workspace

```
git clone https://github.com/robotpt/vision-project.git
git clone https://github.com/robotpt/cordial.git
git clone https://github.com/robotpt/qt-robot.git
git clone https://github.com/robotpt/ros-data-capture.git
git clone https://github.com/RobotWebTools/rosbridge_suite.git
```

Finally, you will have to build your catkin workspace with `catkin_make` from the top folder of your catkin workspace. Note, make sure that you have your ROS environment sourced. After you make your workspace, you can run the tests to confirm that your environment is setup. Make sure you have run `aws configure` or setup your AWS configuration and credentials files manually.

```
source /root/catkin_ws/devel/setup.bash && rostest cordial_gui test_cordial_gui_
↪actions.test && rostest cordial_gui test_cordial_gui_pubs_and_subs.test && rostest␣
↪cordial_manager test_cordial_manager_actions.test && rostest cordial_manager test_
↪cordial_manager_pubs_and_subs.test && rostest cordial_manager test_cordial_manager_
↪services.test
```

1.3 Running the interaction remotely

Create a Dataplicity account and sign on. Go to the devices tab and then click "+ Add New Device". Copy or enter this command into a terminal on QT's body PC and enter QT's password 'qtrobot'. After that runs, remote access should be setup. You can confirm this by clicking the added device and confirming that you can explore the file system.

To run the vision project interaction, first run `su qtrobot` and enter `qtrobot` for the password. Next, enter `cd ~/vision-project/docker && ./run.sh run` to start the interaction.

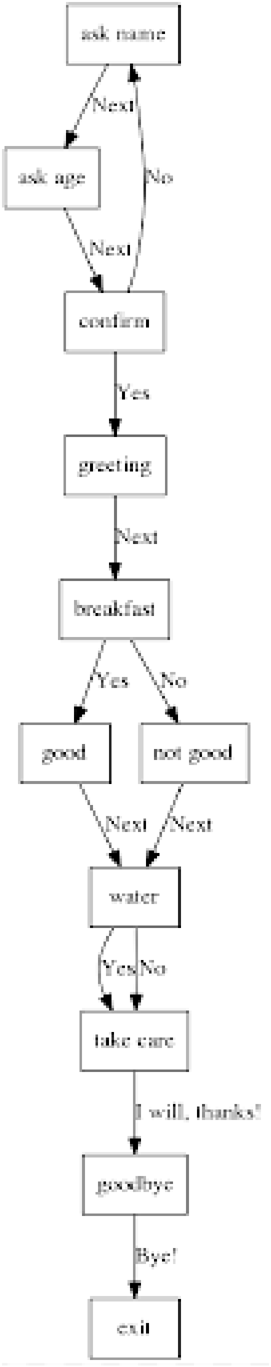
Then, you can access the GUI from either `192.168.1.207:8082/low_vision.html` or `192.168.1.209:8082/low_vision.html` depending on which QT you are using.

Note: Currently, the interaction starts automatically once you access the GUI. After the interaction finishes, it will wait 20 seconds before restarting. Eventually, the interaction will be set to begin only after the GUI screen is clicked/tapped.

1.4 Visualizing the interaction

The content of the interaction is contained in a `StateCollection` object. Use `StateCollection.visualize()` to view a flowchart of the interaction. By default, the flowchart displays only the name of each node; set the `show_content` parameter to `True` to display the entire message.

Here is an example:


ask name
Next
No
ask age
Next
confirm
Yes
greeting
Next
breakfast
Yes
No
good
not good
Next
Next
water
Yes
No
take care
I will, thanks!
goodbye
Bye!
exit

CHAPTER 2

Meta

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https://github.com/robotpt/vision-project