Problem Set 1b

Download the pset files in a .zip

Download here a .zip with the notebook and a couple helper files (pset1/pset_1b.zip)

Pset 1b is due on Gradescope Monday 9/17/18 by 10pm.

Introduction

Generally speaking, there are three types of files in every problem set.

- Jupyter notebooks (`.ipynb`).

  The notebooks are usually the first thing you open after downloading the zip file. They contains questions you'll need to answer and code snippets to generate visualizations and test your code. The notebooks are meant as a sandbox for you to experiment with different ideas, and **you do not need to submit them.** In this pset, you should start by looking at `pset1b_gradient_descent.ipynb` . Once everything in that notebook is complete, you can move on to `pset1b_planar_arm_ik.ipynb` . There is a third notebook, `mathematical_program_examples.ipynb` .This is meant as a reference and does not contain any problems. It is referenced in the other notebooks when it will be useful. If you'd like you can take a quick look at static .html versions of parts 1 (pset1/pset_1b_gd.html) and 2 (pset1/pset_1b_ik.html).

- A (few) `.py` file(s).

  These files contain the implementation of most functions called inside the notebooks. The bulk of the pset is about completing/modifying certain parts of these files, as per the instructions given in the notebook. **You will need to submit some of these files for grading.**

- A test script with a name like this: `test_pset_1b.py` .

  This is the same test script on Gradescope that determines how many points you score. The test script is provided to you so that you can run the tests locally and quickly get feedback/confidence on how well you do. **Do not modify the test script**.

How to do this Problem Set

First make sure you've gone through the install instructions (install_drake_docker.html) for Drake + Docker. Note that if you use Windows, you should redownload the docker utility files to get the most recent updates.

To run the notebook, do this. (Make sure to have the notebook script in your terminal's working directory, and specify the path to the `pset_1b` unzipped folder)

```
## or use the notebook script for your system
./docker_run_notebook.sh drake-20180911 /path/to/pset_1b
```

For example if you have the `pset_1b` directory in the same parent directory as the `docker_run_notebook.sh` script, you can run:

```
## or use the notebook script for your system
./docker_run_notebook.sh drake-20180911 pset_1b
```

How to submit this Problem Set

We will use Gradescope (https://www.gradescope.com) for collecting and grading your problem sets, since it allows us to auto grade your code against our software tests, as well as look at your code and other text answers. If you did not already do this, make an account on Gradescope, and add 6.881 with the class code emailed to you. Although all course content is open, we only do grading for officialy enrolled students who are taking this class for credit. Please contact the class staff if you are taking the class for credit but have not received the access code.

Please note that you need to make **only one** submission for the problem set.

This submissions is:

1. **Autograded submission**
   - Upload your `optimization.py` and `inverse_kin_planar_arm.py` to "Pset 1b" on Gradescope.
   - In our testing, Gradescope will give you a grade within 1 minute. You can resubmit as many times as you'd like before the deadline.

Please carefully follow the directions for each submission.

Good luck and have fun!