

Don't Drop The Package - User Guide

Guy Eisenberg, Avigail Ben-Eliyahu and Inbar Strull (partial contribution)

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This software package is an addition to the DiscoPygal program that includes a solver that finds a smooth path for a forklift and translates it to a set of commands that drive a Robomaster EP Core robot through it.

Installation:

In order to use this package you will need to get the dicopygal_demo.

- Follow the instructions listed in the README of the dicopygal_demo to install the whl that needed to be installed, and to get to the virtual environment of discopygal.

- From discopygal_demo README:

Prerequisites:

- * Python 3.9 or newer
- * pipenv (via pip install pipenv)

To install the environment:

1. In the current folder, run:
pipenv shell
2. Install dependencies (temporary measure, will be fixed in next DSPGL versions!):

pipenv install

3. Install CGALPY:

pip install CGALPY-1.0-py3-none-any.whl

4. Install DiscoPygal:

pip install discopygal_taucgl-1.0.1-py3-none-any.whl

- Now, clone our repository from <https://github.com/guyeisen/DontDropThePackage> . make sure to clone the master branch.
- For the project Interpreter choose the virtual environment of discopygal.
- From the project folder, run the command: **pip install -r requirements.txt**
- Open the following file from the virtual environment folder:
...\virtualenvs\discopygal2-cO78VpgF\Lib\site-packages\discopygal\gui\RCircleSegment.py
And change line number 46 from

`"shift = -(-shift-2*math.pi)"`

into

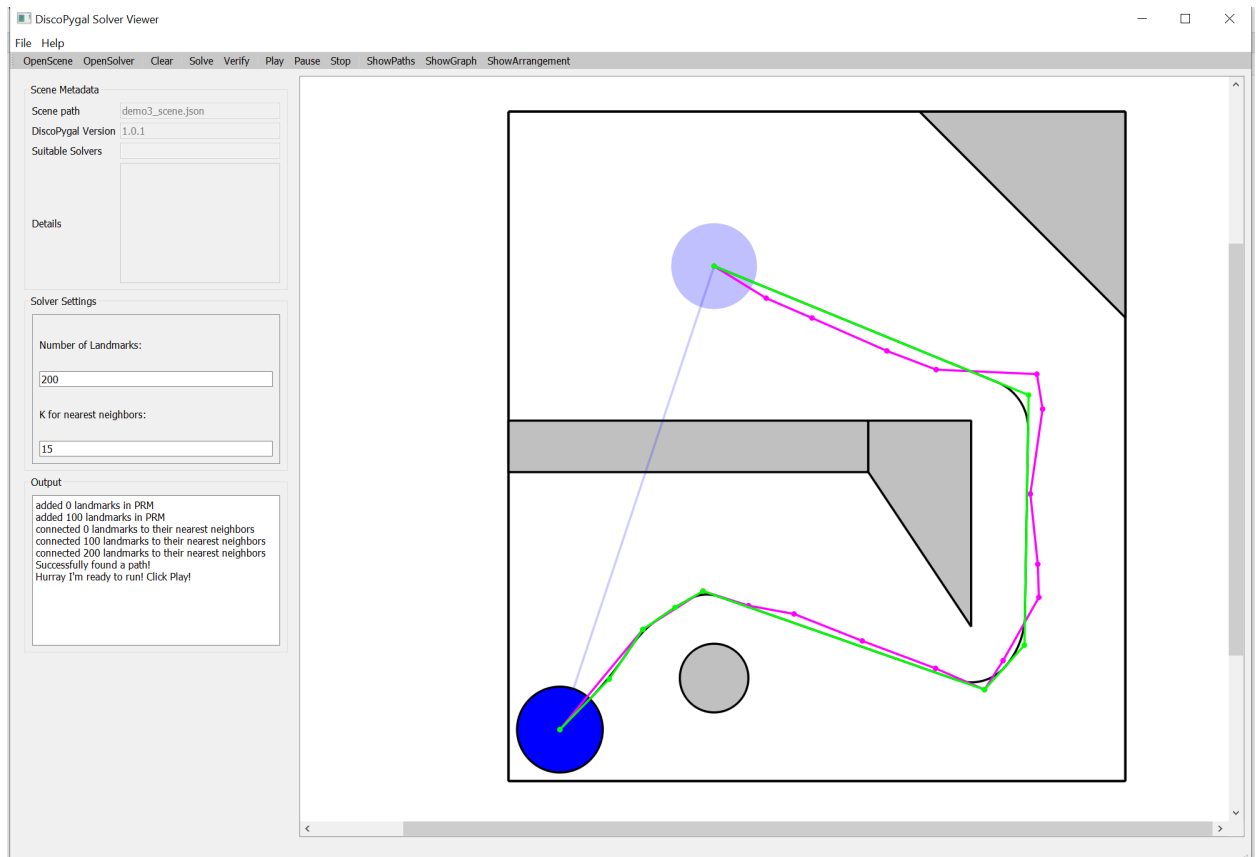
`"shift = shift+2*math.pi"`

That will fix a bug in the presentation of arcs in the DiscoPygal GUI.

Now you are ready to run the program! :)

How to run the program:

- First of all, make sure to be connected to the robot before you run the program.
- From the environment and the location that main.py is, run:
 - **python main.py**
- The discopygal gui will appear, showing you the pre-loaded scene, and in a few seconds, the paths will be shown as well on the scene (depending on whether the PRM samples were good enough to create a path)



- Once you see the writings "Hurray I'm ready to run! Click Play!", you can hit the play button, and the animation will show, and right afterwards, the robot will start

moving according to this scene according to the green path, which is representing our optimization over the pink path, which is the shortest path. So make sure it is located accordingly and nothing is blocking it.

- If you see the writing that path was not found - just click the solve button again and it will generate a new graph and new path.
- If you want to change the scene, it is exactly how you would change the scene in discopygal - just click the open scene button and choose different scene (json), and then click solve. Our PRM is already loaded to the program and there is no need to load it again.
- All other buttons are functioning as the original discopygal, and we didn't touch those parts of code. For example you can click the show graph button to show the graph that was created from the PRM:

