

Yuan Qin

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Part

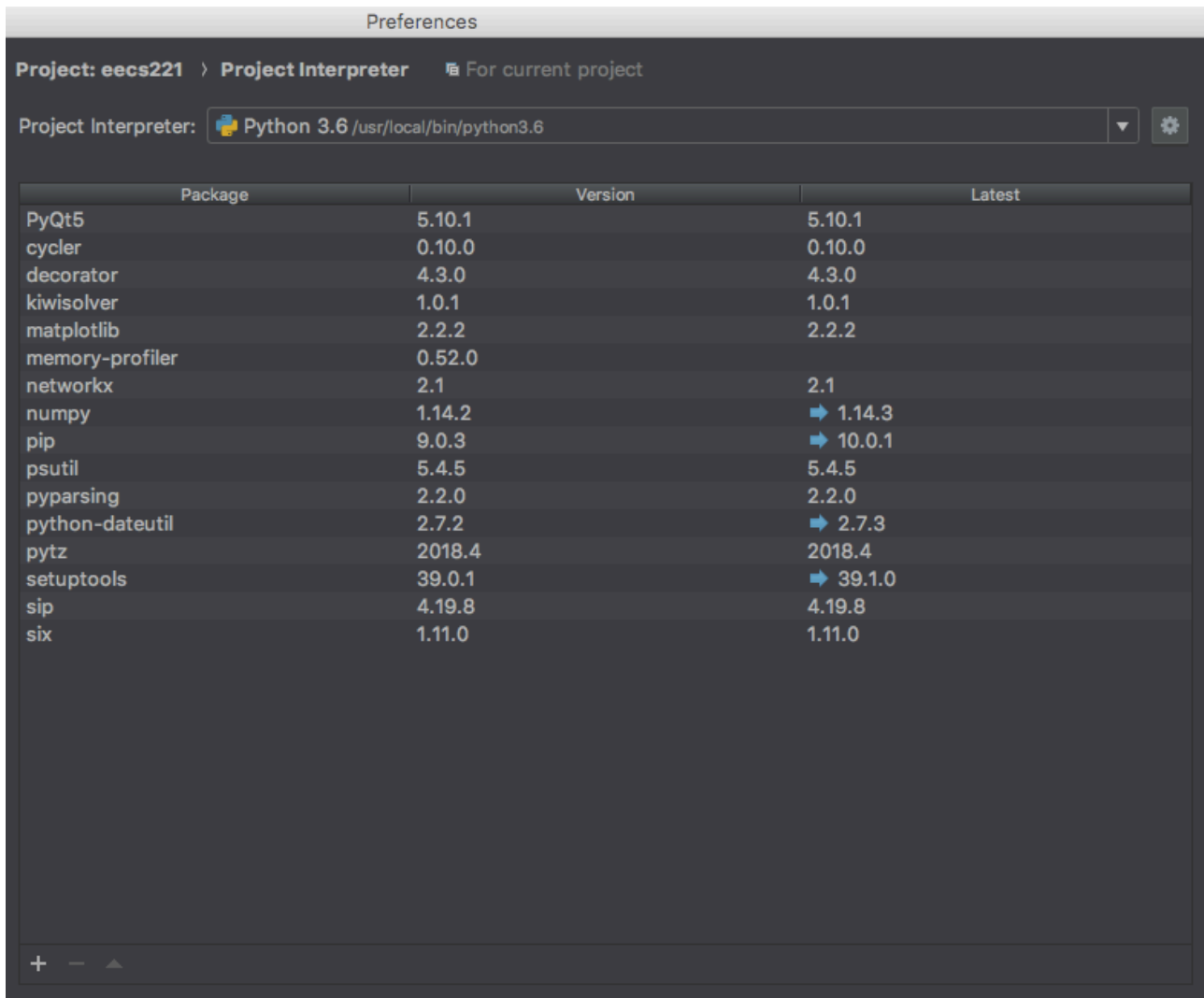
1. Describe the machine you are running your tests on (CPU, OS, Memory, other relevant info)

—OS: MacOS, Processor:1.3GHZ Intel Core i5, memory: 4GB 1600MHz DDR3, the application is implemented under python3.

—Language: python 3.6, library used, version see attached:

Highlighted lib must be included: PyQt5, matplotlib, networkx, memory-profiler

For GUI you need run graphplot.py instead of the warehouseapp.py as main for now



Package	Version	Latest
PyQt5	5.10.1	5.10.1
cycler	0.10.0	0.10.0
decorator	4.3.0	4.3.0
kiwisolver	1.0.1	1.0.1
matplotlib	2.2.2	2.2.2
memory-profiler	0.52.0	
networkx	2.1	2.1
numpy	1.14.2	➡ 1.14.3
pip	9.0.3	➡ 10.0.1
psutil	5.4.5	5.4.5
pyparsing	2.2.0	2.2.0
python-dateutil	2.7.2	➡ 2.7.3
pytz	2018.4	2018.4
setuptools	39.0.1	➡ 39.1.0
sip	4.19.8	4.19.8
six	1.11.0	1.11.0

2. Briefly describe any changes you may have made since the previous project part

- Selection added, for users to select whether calculate effort or not, and choose methods to compute the shortest path, i.e. nearest neighbor or branch and bound.
- Pre-processing: item dimensions of new item information file is read into a nested dictionary and stored for further computation.
- Efforts are calculated along the path

```
one optimized: [148141, 31378, 128827, 49473]
Minimum travel distance: 74 ,in order of: start from (0, 0) [148141, 31378, 128827, 49473] , end at (0, 20)
go to shelf: [3, 8] on location: [7, 17] pick up item: 148141 , then
go to shelf: [9, 5] on location: [19, 11] pick up item: 31378 , then
go to shelf: [9, 5] on location: [19, 11] pick up item: 128827 , then
go to shelf: [10, 5] on location: [21, 11] pick up item: 49473 , then
drop off at: [0, 20]
Nearest neighbor cost: 0.7468600273132324
Whether compute effort? 1 for yes, 2 for no
Backend MacOSX is interactive backend. Turning interactive mode on.
total effort 156.4
```

Effort by path calculated by nearest neighbor:

```
Minimum travel distance: 122 ,in order of: start from (0, 0) [49473, 31378, 128827, 148141] , end at (0, 20)
go to shelf: [10, 5] on location: [21, 11] pick up item: 49473 , then
go to shelf: [9, 5] on location: [19, 11] pick up item: 31378 , then
go to shelf: [9, 5] on location: [19, 11] pick up item: 128827 , then
go to shelf: [3, 8] on location: [7, 17] pick up item: 148141 , then
drop off at: [0, 20]
Branch and bound cost: 0.002880096435546875
Whether compute effort? 1 for yes, 2 for no
optoptopt [49473, 31378, 128827, 148141]
total effort 83.6
```

Effort by path calculated by nearest neighbor: