

Report for Lab 4 in TDDC17, Artificial Intelligence

Planning

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Task 1

See separate files for the source code to the implementation.

Task 2

To test how good our domain was we varied the parameters *Number of rooms* (and automatically number of doors), *Number of boxes in room* and *Number of goals*.

In Table 1, Table 2 and Table 3 and as well in Figure 5, Figure 6, and Figure 7 we see how well these planners performed on our designed problems.

The setup of the experiment when varying the room parameter was the following: there was rooms (and doors), the robot, *shakey* starting in room 1 and the goal of the problem was always to turn on the lamp in *one* room. The room configuration can be seen in the figures below.



Figure 1: Two rooms

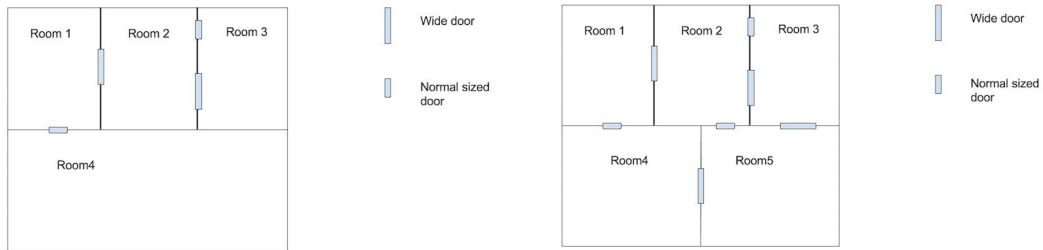


Figure 2: Three rooms

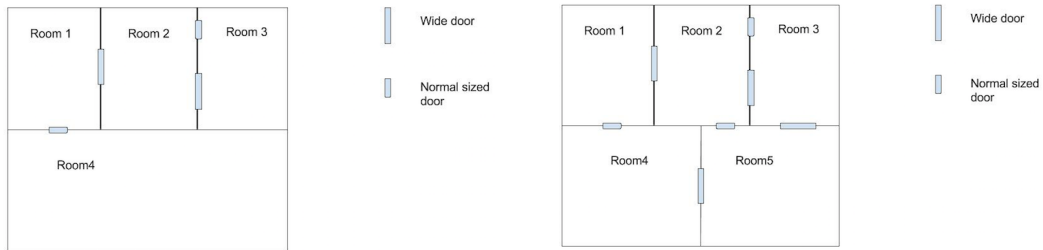


Figure 3: Four rooms

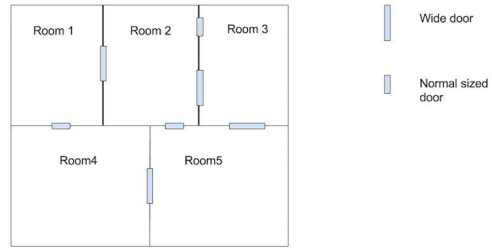


Figure 4: Five rooms

Table 1: Increasing number of rooms (and doors)

Problem \ Planners	1 room	2 rooms	3 rooms	4 rooms
FF	0.02 s	0.79 s	7.46 s	Process killed
IPP	0.03 s	0.99 s	405.33 s	Process Killed

The problem world for when varying the box parameter is the room configuration with three rooms as seen in Figure 2. What we did was to create more boxes and put them in a room. The goal is still to turn on the light in *one* room.

Table 2: Increasing number of boxes created

Problem Planners	1 room	2 rooms	3 rooms	4 rooms	5 rooms
FF	7.58 s	14.43s	23.91 s	Process killed	Not tested
IPP	4.04 s	6.53 s	10.74 s	15.81s	16.71s

For the last experiment, we varied both number of rooms, number of boxes and goals. The result can be seen below.

Table 3: Combination of parameters

Problem Planners	1 box, 3 goals	2 boxes, 4 goals	3 boxes 5 goals
FF	6.78 s	82.58 s	Process killed
IPP	609.47 s	Process killed	Process killed

What we mean with *Process killed* in all the tables is either that the output from the terminal is *killed* or that the process has been running for more than 10 minutes.

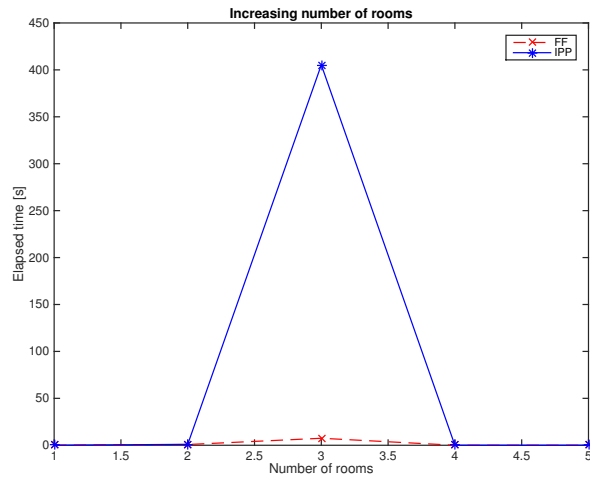


Figure 5: Parameter changed: Number of rooms

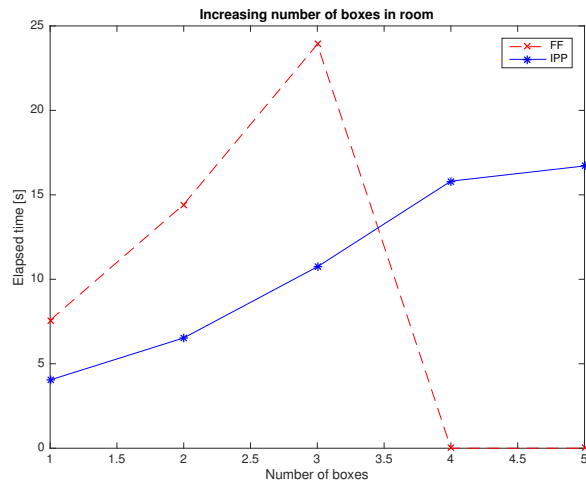


Figure 6: Parameter changed: Numbers of boxes

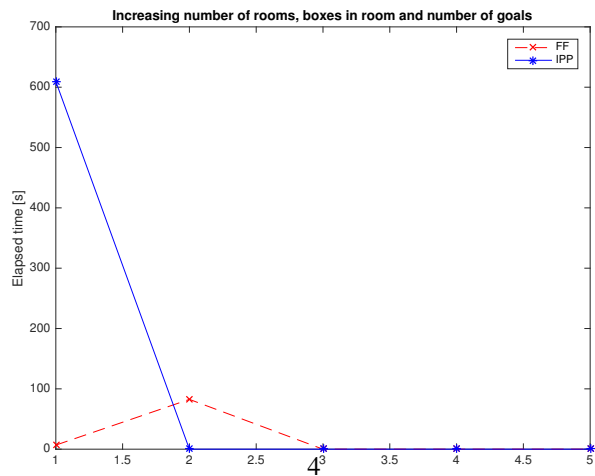


Figure 7: Parameter changed: Rooms, boxes and goals