

1 Further Experimental Results

We reran the experiments from the paper without a time limit to try to find the optimal number of preferences that could be satisfied (if LAMA successfully runs to completion, it will have found an optimal plan). We made an attempt using 32 GB of memory, shown in Table 1 below.

| Problem | none | | truth | | | Preference Type misconception | | | oblivious | | | conscious | | |
|---------------|---------|-------|---------|----------|--------|----------------------------------|----------|--------|-----------|-----------|---------|-----------|----------|--------|
| | $ \pi $ | time | $ \pi $ | time | prefs | $ \pi $ | time | prefs | $ \pi $ | time | prefs | $ \pi $ | time | prefs |
| Corridor-3 | 5 | 0.35 | 6 | 0.36 | 2/6 | 6 | 0.35 | 1/6 | 6 | 0.36 | 3/6 | 6 | 0.37 | 3/6 |
| Corridor-5 | 5 | 0.45 | 8 | 0.47 | 4/10 | 6 | 0.51 | 2/10 | 6 | 0.52 | 6/10 | 6 | 0.51 | 5/10 |
| Corridor-7 | 5 | 8.62 | 8 | 0.71 | 5/14 | 9 | 10.61 | 4/14 | 6 | 11.17 | 8/14 | 7 | 4.34 | 7/14 |
| Grapevine-4-2 | 4 | 3.91 | 11 | 3544.62 | 15/32 | 7 | 3763.35 | 11/32 | 5 | 10506.12 | 26/32 | 8 | 3975.82 | 16/32 |
| Grapevine-4-4 | 6 | 3.63 | 15 | 877.29 | 14/32 | 10 | 1849.93 | 10/32 | 8 | 2071.24 | 24/32 | 9 | 910.78 | 16/32 |
| Grapevine-4-8 | 11 | 68.26 | 14 | 287.46 | 12/32 | 13 | 432.74 | 8/32 | 13 | 128.20 | 20/32 | 12 | 588.61 | 16/32 |
| Grapevine-8-2 | 4 | 28.95 | 19 | 3133.83* | 63/128 | 20 | 2972.00* | 55/128 | 6 | 11362.11* | 118/128 | 13 | 4226.59* | 64/128 |
| Grapevine-8-4 | 5 | 29.38 | 35 | 3162.95* | 62/128 | 24 | 3197.74* | 54/128 | 15 | 13891.73* | 116/128 | 19 | 8762.30* | 49/128 |
| Grapevine-8-8 | 7 | 31.03 | 32 | 3321.34* | 60/128 | 27 | 3273.21* | 52/128 | 13 | 15175.58* | 112/128 | 27 | 4867.49* | 58/128 |

Table 1: Experimental results with no time limit for LAMA, though it was not allowed to use more than 32 GB of search memory. Times (in seconds) are the times taken by LAMA on the encoded classical⁺ problem with operator costs (encoding times are not included). The * symbol means the search ended early because it ran out of memory. An entry x/y in a “prefs” column indicates that the problem had y preferences, of which x were satisfied by the found plan.

Since the experiments in the last three rows ran out of memory with 32 GB, we investigated further using more memory. In the table below, each experiment was run on a system with an Intel Xeon Gold 5218 processor and 128 GB of RAM. In most cases the planner still ran out of memory, though we did learn some new things.

| Problem | truth | | Preference Type misconception | | oblivious | | conscious | |
|---------------|-----------|--------|----------------------------------|--------|-----------|-------|-----------|--------|
| | time | prefs | time | prefs | time | prefs | time | prefs |
| Grapevine-8-2 | 8607.36 | 63/128 | 25146.74* | 55/128 | 28471.03* | 118 | 21779.41* | 64/128 |
| Grapevine-8-4 | 17722.59* | 62/128 | 16972.76* | 54/128 | 42223.66* | 116 | 37214.39* | 52/128 |
| Grapevine-8-8 | 20573.49* | 60/128 | 20939.93* | 52/128 | N/A* | 112 | 39692.84* | 63/128 |

Table 2: Experimental results with no time limit for LAMA, and 128GB of RAM. Times (in seconds) are the times taken by LAMA on the encoded classical⁺ problem with operator costs (encoding times are not included). The * symbol means the search ended early because it ran out of memory. The N/A time could not be recovered. An entry x/y in a “prefs” column indicates that the problem had y preferences, of which x were satisfied by the found plan.