**Table 2. Comparison between FIQL, CQL, PSO, GWO and DA in typical grid map.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Map | Statistics | | FIQL | CQL | PSO | GWO | DA |
| Map(1) | Path length | Mean  Std Dev.  *t*-test | 24.489  3.103  - | 25.886  2.254  5.07e-2 | 26.671  1.750  1.36e-3 | 26.911  1.754  4.49e-4 | 27.178  1.693  1.04e-4 |
| Time | Mean | 12.045 | 14.416 | 10.238 | 9.872 | 9.721 |
| Map(2) | Path length | Mean  Std Dev.  *t*-test | 24.977  3.418  - | 27.728  0.517  5.432e-5 | 30.892  0.822  1.366e-5 | 30.358  1.966  5.241e-10 | 31.252  1.984  4.239e-12 |
| Time | Mean | 12.098 | 14.670 | 10.205 | 10.071 | 10.138 |
| Map(3) | Path length | Mean  Std Dev.  *t*-test | 25.045  3.142  - | 27.613  0.659  4.998e-5 | 30.892  1.320  2.973e-13 | 30.778  1.751  3.721e-12 | 31.353  2.082  7.147e-13 |
| Time | Mean | 12.097 | 14.758 | 10.176 | 10.167 | 10.134 |
| Map(4) | Path length | Mean  Std Dev.  *t*-test | 17.365  1.372  - | 20.001  1.041  1.337e-11 | 20.711  5.421  3.551e-13 | 21.750  5.078  3.241e-4 | 21.971  4.947  2.689e-16 |
| Time | Mean | 11.043 | 13.152 | 9.762 | 9.773 | 9.763 |
| Map(5) | Path length | Mean  Std Dev.  *t*-test | 19.279  0.366  - | 21.281  0.309  9.771e-1 | 21.751  5.078  1.012e-2 | 21.786  5.522  1.161e-2 | 22.251  5.878  7.636e-3 |
| Time | Mean | 11.195 | 13.196 | 9.159 | 8.944 | 8.959 |
| Map(6) | Path length | Mean  Std Dev.  *t*-test | 19.170  0.283  - | 21.184  0.271  8.455e-1 | 21.971  4.947  3.026e-3 | 22.915  5.981  1.135e-3 | 22.349  5.034  1.043e-3 |
| Time | Mean | 11.223 | 13.465 | 9.180 | 8.983 | 8.917 |