**Project 2 MDP**

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**1. Files description**

|  |  |
| --- | --- |
| mdp/  ├── doc.docx/  ├── input/  │   ├── i1.txt  │   │  │   └── i8.txt  └── src/  ├── value\_iteration.py  ├── policy\_iteration.py  └── utils.py | // document file  // input folder  // input files  // srouce code folder  // python script of value iteration  // python script of policy iteration  // python script for utilities |

**2. Arguments for algorithms**

|  |  |
| --- | --- |
| board\_file\_path | string, the path of input file |
| threshold | float, default=0.01, the threshold for stop the iteration |
| init\_policy\_direction | int, default=None, the index of the chosen direction in ['up', 'right', 'down', 'left'] for initializing the policy. If None, randomly assign directions to the initial policy. |
| use\_arrow | Boolean, default=False, set True to use arrows for display |
| verbose | Boolean, default=False, set True to display extra information |

**3. Run the code**

**1) Run value iteration**

Command:

python value\_iteration.py

You can set the configuration of the algorithm ` value\_iteration.py `:



Output example:

A picture containing electronics, computer, circuit

Description automatically generated

**2) Run policy iteration**

Command:

python policy\_iteration.py

You can set the configuration of the algorithm in ` policy\_iteration.py `:



Output example:

A picture containing electronics, computer, circuit

Description automatically generated

**4. Experiments (Runtime)**

**1) Compare different inputs**

**2) Compare different initialization method**

**3) Update the values while improving the policy**

**5. Conclusions**