A Factored MDP Approach for Resilient Large-Scale Interdependent Critical Infrastructures

User Manual

New York University
Center for Cybersecurity

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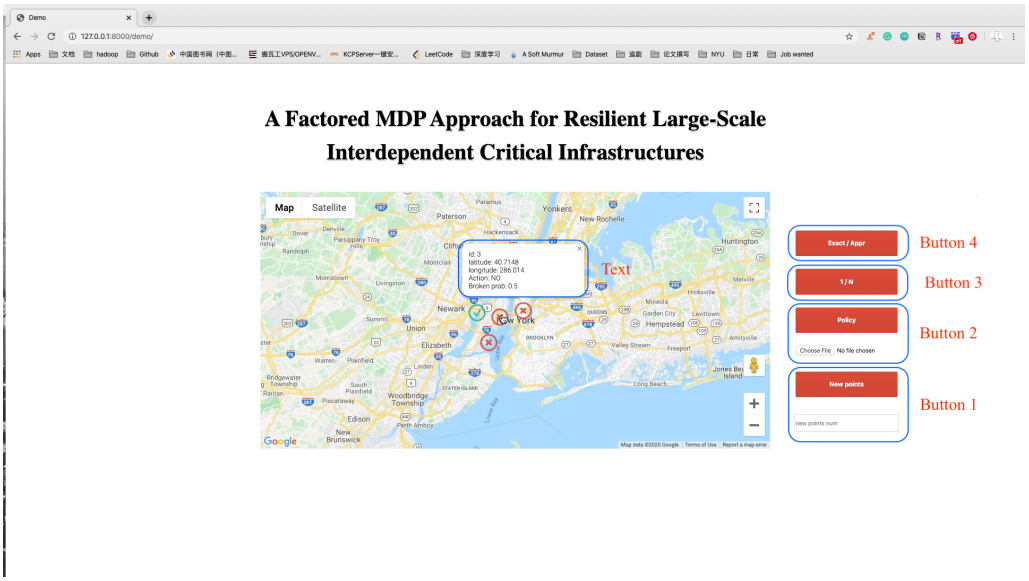
1 Interface Description

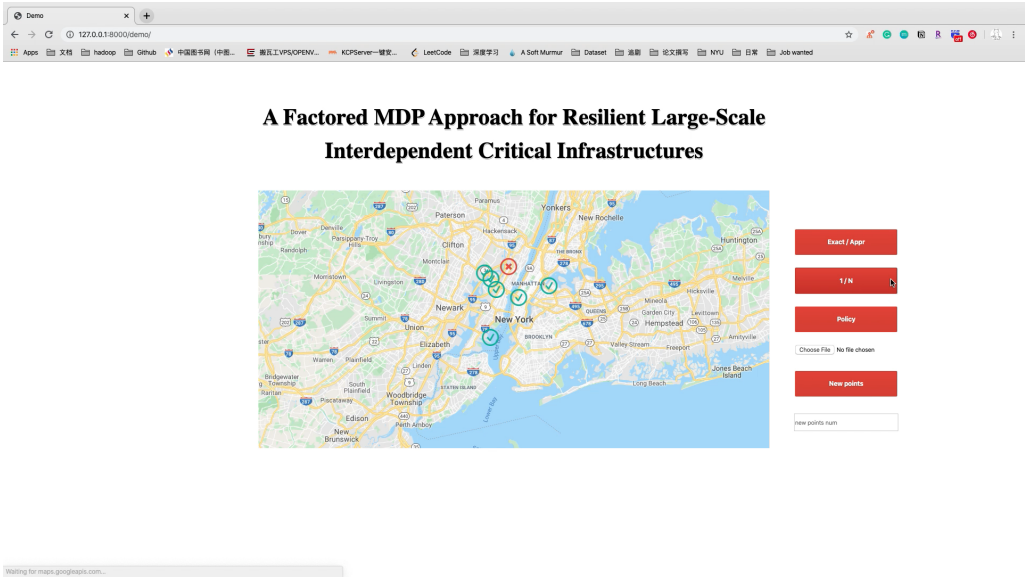


The interface contains four buttons to control interactions, and one text box to show some information about one point.

1.1 Buttons explaination

Button 1 – New points

User can input a new number of points. Then user will see the change on the map. All matrix will also be recalculated on the background.



Button 2 – Policy

User can upload his own policy csv file. Click "Choose file" to select the policy file which want to be used. A simple example of policy file can be found in dicionary called "policy.csv". It works for 4 points and will do nothing in each state.

Button 3 – 1 / N

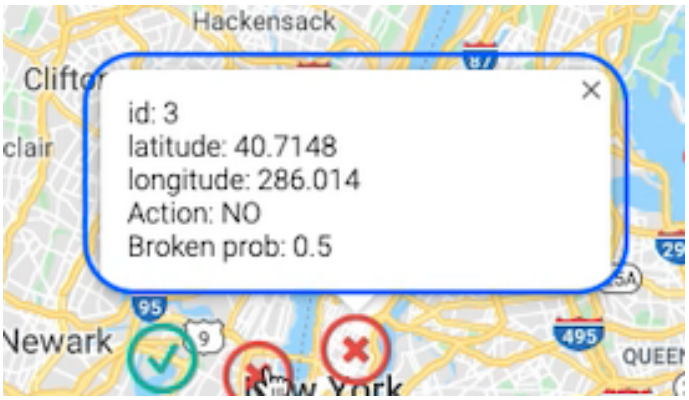
User can change the number of actions in each state(How many points can be repaired at each time). 1 means only one point can be repaired. N means all points can be repaired.

Button 4 – Exact / Appr

The way to caculate value matrix. Not finished yet...

1.2 Text and Map explanation

Each point woule be represented as a green or red circle on the map. Click each point will show a text box, which contains the id, longitude, latitude, whether the point is being repaired and the broken probability.



2 Code explanation

2.1 How to represent state

I use binary number to represent state. For example: "0110". It means there are four points, and "1" means this point is broken, "0" means this point is not broken.

2.2 How to represent actions

If you can only repair one point at a time, I use decimal number to represent actions. For example: "4" means 4th point is being repaired at this time.

If you can repair multiple points at a time, I use binary number to represent actions. For example: "0110". "1" means the point is being repaired at this time, and "0" means not.

2.3 How to run demo

Here are codes to run demo in terminal:

```
cd demo/
python manage.py runserver
```

Then you can see the demo at http://127.0.0.1:8000/demo in website.