PRs received and PRs created

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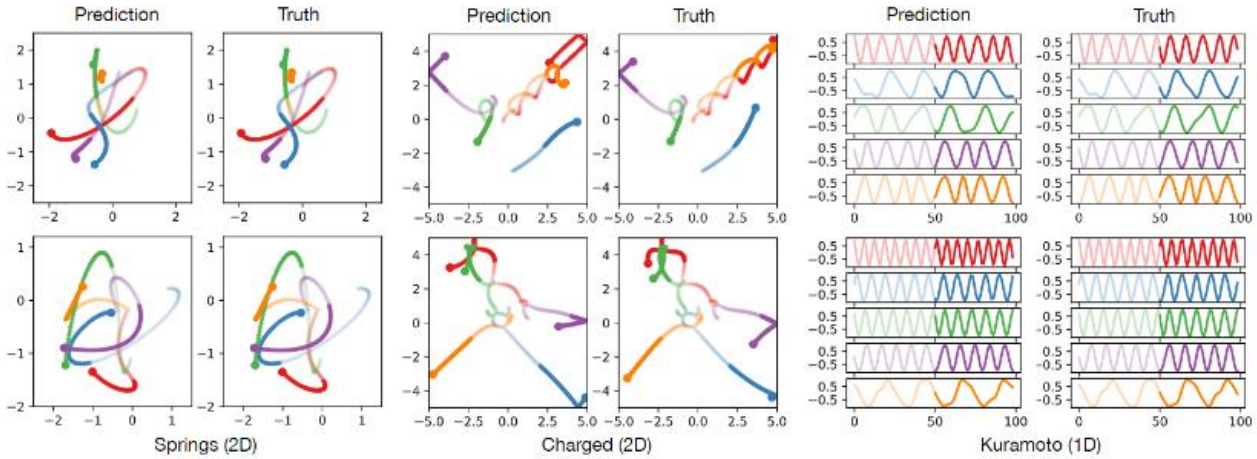
2022 - NRI

Reimplementation of the **N**eural **R**elation **I**nference proposed in the following paper: Kipf, Thomas, et al. "Neural relational inference for interacting systems." *International Conference on Machine Learning*. PMLR, 2018.



Results figures in Neural Relational Inference for Interacting Systems

2 PRs from falseu (YANG Chengkai)

1 PR from naba89 (Nabarun Goswami).

Received PR-1

- **Added GPU support**, from naba89
  - GPU support

```
device = 'cuda' if args.cuda and torch.cuda.is_available() else 'cpu'
model = model.to(device)
test_series = torch.tensor(test_series).to(device)
...
```

GPU support

Run all the scripts with the `--cuda` flag. For example:

```
python train_enc.py --cuda
python train_dec.py --cuda
python run_encoder.py --cuda
python run_decoder.py --cuda
```

Received PR-1

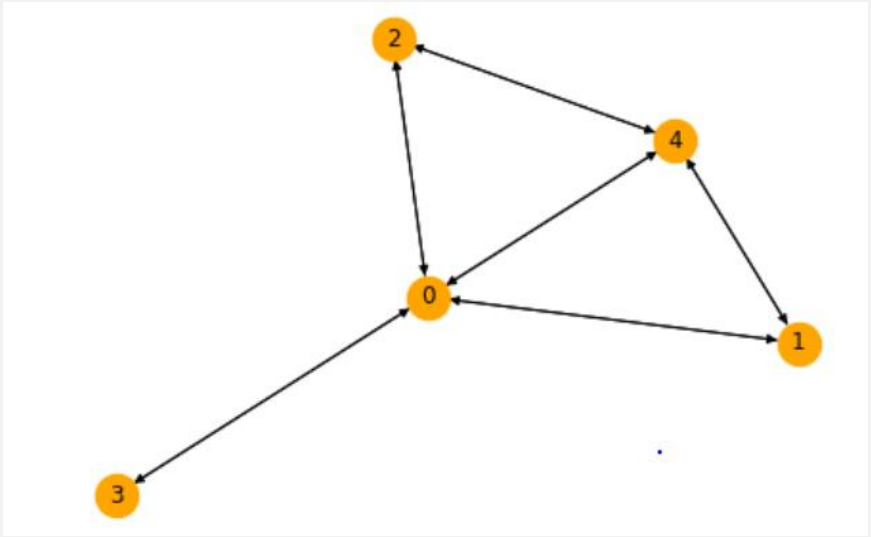
- **Add GPU support**, from naba89
  - Create environment yaml file for CUDA platform.
  - Update README
  - All modified files have been checked.

If you would like to use GPU, run the following command:

```
conda env create --name recoveredenv --file environment-cuda.yml
```

Received PR-2

- **Visualization for encoder outputs**, from falseu
  - Network drawing with networkx library.



Visualize encoder output #4

Closed joshua-shuhan opened this issue on 8 May · 5 comments

joshua-shuhan commented on 8 May — Collaborator

Encoder gives edge prediction. A visualization for encoder output results is desirable.

How to get start
In the default setting, after running `run_encoder.py`, `_springsLightSoutput.npy` and `_springsLightStarget.npy` will be saved in the `saved_results/encoder_result` folder. `_springsLightSoutput.npy` gives edge predictions while `_springsLightStarget.npy` is the ground truth target.

Tips
The shape of _springsLight5.npy is (200, 100, 2). 200 is the number of batches. There are multiple simulations in one batch (in this case, 5 simulations in one batch). The number of nodes in the simulation is 5. Therefore, for each simulation, the size of edge prediction is (20, 2).

joshua-shuhan added the enhancement label on 8 May

joshua-shuhan commented on 8 May — Collaborator, Author

@falseu
I think node conflict is not a problem for directed graphs.
For an undirected graph, when conflict, is it ok to take the larger value as the prediction output?
For example, `1->4: [0.6, 0.4]`, `4->1: [0.2, 0.8]`, since 0.8 > 0.6, we choose the second type as the prediction result of the undirected edge.

falseu commented on 9 May — Contributor

Thank you for your explanation. You mentioned that for each simulation, the number of nodes is 5. If we construct a directed graph without self-loop, then the number of edges is `5*4=20`, which matches the size of edge prediction (20, 2).

We also need the node labels to construct the graph. Then how should we determine the node labels for the 20 edges? Currently I assume the following label assignment.

```
1->2, 1->3, 1->4, 1->5,
2->1, 2->3, 2->4, 2->5,
3->1, 3->2, 3->4, 3->5,
4->1, 4->2, 4->3, 4->5
5->1, 5->2, 5->3, 5->4
```

Please verify this assignment and I will fix my code accordingly. Thank you.

joshua-shuhan commented on 9 May — Collaborator, Author

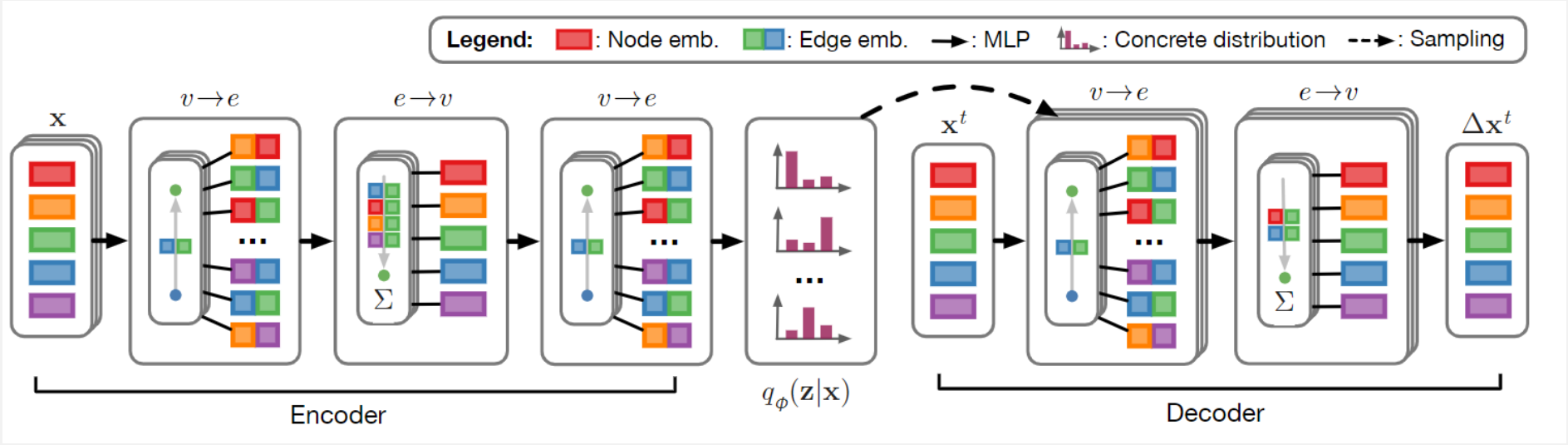
Yes, that is the case.
You can check how the edge is generated here.

falseu commented on 9 May — Contributor

Please review the updated visualization. Thanks.

Received PR-3

- **CNN encoder**, from falseu
  - Implement two classes `class CNNBlock(nn.Module)` and `class CNNEncoder(nn.Module)` with corresponding methods.



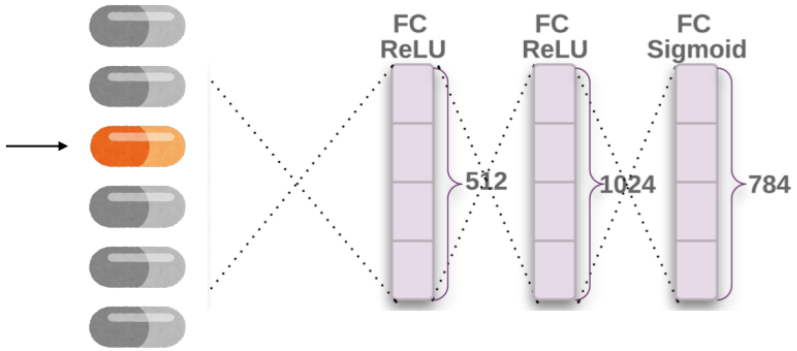
Kipf, Thomas, et al. "Neural relational inference for interacting systems." *International Conference on Machine Learning*. PMLR, 2018.

PR-1, 2022-CapsuleNetwork

- PR to media-comp/2022-CapsuleNetwork.

Tweaking One Value in the Classification Capsules

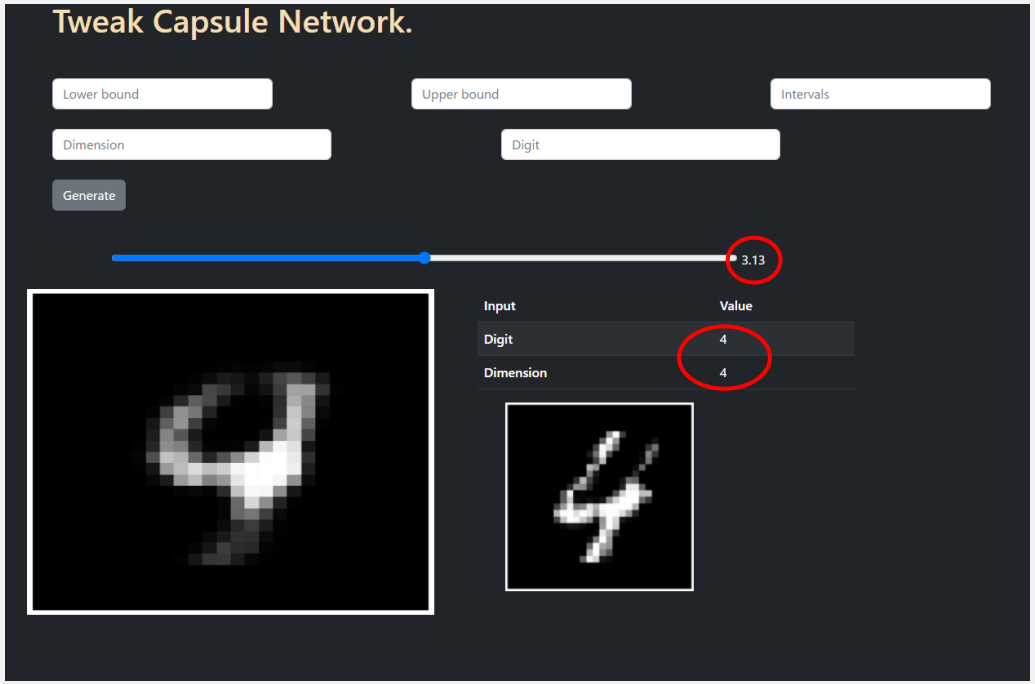
- Change a value in the capsule, and then reconstruct



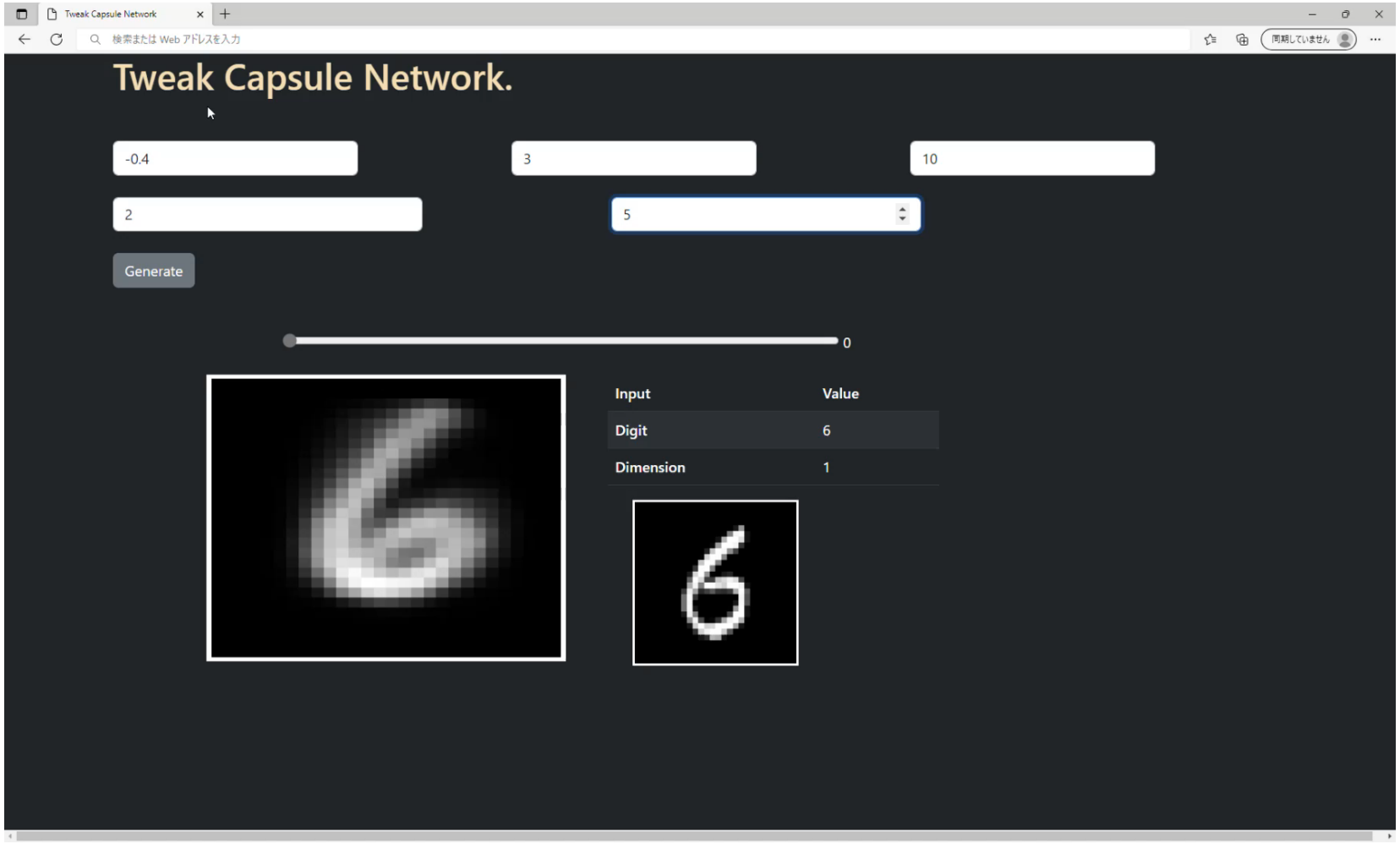
from You Shuheng's slides

PR-1, 2022-CapsuleNetwork

- PR to media-comp/2022-CapsuleNetwork.
- **Implement a Flask app for vector tweaking visualization**.
  - User needs to provide 5 parameters.
  - The app will display warning messages if the input is not valid.
  - The display image will change with the moving slider bar.
  - The original figure is shown for comparison.

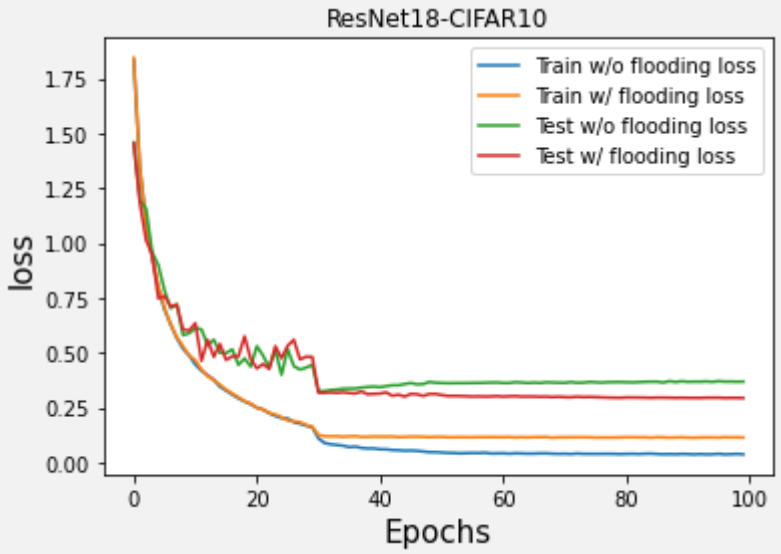


PR-1, 2022-CapsuleNetwork



PR-2, 2022-Flooding

- PR to media-comp/2022-Flooding.
- We want to see if the flooding mechanism can work in other network models and datasets.
- **Implement ResNet-18 with flooding, trained with CIFAR-10 dataset**.
  - Compare training w/o flooding constant and training w flooding constant = 0.1
  - The test accuracy is 90.6%.



PR-3, 2022-KGAT

- PR to media-comp/2022-KGAT.
- **Update `PaperReview.md`**
  - Add explanations to make the context more understandable.
  - Fix some typos.