Reproduction_of_other_works

This code can be used as the supplemental material for the paper: "Towards a Lossless Conversion for Spiking Neural Networks with Negative Spike Dynamics". (Submitted to *Advanced Intelligent Systems, Wiley*, July, 2023) .

Citation:

To be completed.

Features:

- In many other works, they use various input encoding styles (e.g constant and possion codes) and network training parameters which are different from ours, even there are no available open-source projects to reproduce their experimental results. Besides, in their works, `Signal Noise Ratio` (SNR) for spiking activities of SNNs was rarely discussed. Hence, we choose as many as possible reproducible works for comparison.

File overview:

- `README.md` - this readme file.

`Other folders` include six kinds of different reproducible projects for SNR (input noise on datasets) experiments in our paper, please refer to the `noise_ratio` character in their respective main function files.

Requirements

Dependencies and Libraries:

- python 3.8 (https://www.python.org/ or https://www.anaconda.com/)
- tensorflow_gpu 1.2.1 (https://github.com/tensorflow)
- tensorlayer 1.8.5 (https://github.com/tensorlayer)
- pytorch 1.7.1 (https://pytorch.org/)
- matlab R2017b (https://www.mathworks.com/)
- CPU: Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
- GPU: Tesla V100

Please refer to their readme files for more information.

Installation:

To install requirements, **please refer to their readme files for more information.**

Datasets:

- MNIST: dataset, preprocessing
- FashionMNIST: dataset, preprocessing

- CIFAR10: dataset, preprocessing

Run the code:

Please refer to their readme files for more information. Besides, you can refer to the `noise_ratio` character in their respective main function files.

Online available open-source projects

Our provided six projects in this repository can be directly reproducible, and you can easily adjust the `noise_ratio` variable in their main function files for SNR experiments. Besides, you can refer to their original papers for more available information.

Results

Please check these results in our paper.

More question:

- There might be a little difference of results for multiple training repetitions, because of the randomization.
- Please feel free to reach out here or email: xxx@xxx, if you have any questions or difficulties. I'm happy to help guide you.