

Geometry Awakening Cross-Geometry Learning Exhibits Superiority over Individual Structures

This project is the implementation of *Geometry Awakening: Cross-Geometry Learning Exhibits Superiority over Individual Structures*. We provide details about our runtime environment, Setup process, and usage examples.

We sincerely thank you for taking the time to review our paper and work. Your feedback and suggestions are incredibly valuable to us :).

Our runtime environment

- Operating System: Windows 11
- Development Environment: PyCharm Professional Edition
- GPU: RTX 4070Ti
- VRAM: 12GB
- Python: 3.9

Setup

Create a new folder named *GKDonMS*, extract all the files from *Codes&Datasets.zip* into this folder.

Create and activate a conda environment in the terminal.

```
>> cd GKDonMS/  
>> conda create -n GKDonMS python=3.9  
>> conda activate GKDonMS  
>> pip install -r requirements.txt
```

Usage examples

Please note that the results presented in our paper are the averages of 10 experiments, so individual experimental F1-scores may be higher or lower than those reported in the paper.

on the *Airport* dataset:

```
>> conda activate GKDonMS  
>> python main.py --dataset airport
```

- Result:

```
100%|████████████████████| 1600/1600 [00:26<00:00, 61.30it/s]
Graph Knowledge Distillation on Manifold Finished!
Dataset:airport
Student model's F1-score: 0.8422
```

Due to size limitations of the openreview supplementary materials, we have not included the all datasets in this zip file. When you run the code on these datasets for the first time, it will automatically download the corresponding dataset.

on the *Wiki-CS* dataset:

```
>> conda activate GKDonMS
>> python main.py --dataset wikics
```

- Result:

```
100%|████████████████████| 1600/1600 [02:03<00:00, 12.96it/s]
Graph Knowledge Distillation on Manifold Finished!
Dataset:wikics
Student model's F1-score: 0.7557
```

on the *AmzCBC* dataset:

```
>> conda activate GKDonMS
>> python main.py --dataset amz
```

- Result:

```
100%|████████████████████| 1600/1600 [02:38<00:00, 10.08it/s]
Graph Knowledge Distillation on Manifold Finished!
Dataset:amz
Student model's F1-score: 0.7751
```

on the *Citeseer* dataset:

```
>> conda activate GKDonMS
>> python main.py --dataset citeseer
```

- Result:

```
Graph Knowledge Distillation on Manifold Finished!
Dataset:citeseer
Student model's F1-score: 0.7220
```

on the *Cora* dataset:

```
>> conda activate GKDonMS  
>> python main.py --dataset cora
```

- Result:

```
Graph Knowledge Distillation on Manifold Finished!  
Dataset:cora  
Student model's F1-score: 0.8600
```