Software package for Paper "HOZOG"

Xiang Geng

1. Quick Start For New HOZOG Package

1.1 Environment

1. Install follow previous README.

1.2 Basic tour of the HOZOG package

1. Build a model for task, the model must have two function, __int__ and train_valid. The first parameter of __int__ must be the hyper-parameter. Other parameter for __int__ can be a init_model_dict defined in main function. train_valid must receive data (can be a data_dict defined in main function) and return a validation loss.
2. Create a HOZO class by hozo_example=hozo.HOZO(model=model class you define, max_iter=2000, eta=40, q=5, mu=1e-3). Eta is hyper step size. q and mu are parameters defined in HOZOG paper.
3. Define dicts for model as you need. For example:

   init_model_dict = 'num_gpus':num_gpus,'T':T,'lr':lr, 'times':times

   data_dict = 'data':data

   kw = 'init_model_dict':init_model_dict, 'data_dict':data_dict
4. Call hozo_example.fit(lmd0=lambda0, **kw) to run HOZO algorithm with parallel multi-processes.
5. Run test_mp.py for a try on data cleaning task.

2. Some Notes

1. A sigmoid function for hyper-parameters may make it run better.
2. You can change process_num in HOZO class to make it faster.
3. HOZO will faster than Reverse-HO on about 2000 hyper-parameters with a big inner iterations (but not so big for fast, T=2000 is usually OK).
4. Forward-HO can't handle too much hyper-parameters (less than 500, or too slow). Online version of Forward-HO run faster (compare with it if we can win it).