How to launch experiments

1 Files overview.

- Folder "data" – contains all datasets that were used for experiments;
- Folder "DL" – Deep learning experiments;
- Folder "Logistic regression" – source code for logistic regression problem;
  - "generate_data.py" – script for the data preprocessing before launching an experiments. It performs data partitioning per workers;
  - "logreg_functions_fast.py" – contains auxiliary functions for logistic regression problem;
  - "bdfg_distributed_stable.py" – implementation of EF21 method for the experiment on logistic regression with nonconvex regularizer;
  - "tkef_distributed_stable.py" – implementation of EF method for the experiment on logistic regression with nonconvex regularizer;
  - "bdfg_plus_distributed_stable.py" – implementation of EF21 method for the experiment on logistic regression with nonconvex regularizer;
  - "script_generators.ipynb" – bash scripts generator to run a sequence of experiments on cluster with slurm workload manager
  - "biased_tpc.ipynb" – a code to plot the result.
- Folder "Least squares (PL setting)" – source code for PL setting (least squares problem); All files in the folder "Least squares (PL setting)" has the similar name structure as in the folder "Logistic regression".

2 Experiments with logistic regression /least squires problem

2.1 Preprocessing

Before running experiments one need to prepare data for that via script "generate_data.py". For example, the command

```
python3 generate_data.py --dataset w8a --num_workers 20 --loss_func log-reg
```

would create a partitioning of `w8a` dataset to 20 workers.

2.2 Running experiments

An example of the command to run an experiment:

```
python3 bdfg_distributed_stable.py --k 1 --dataset mushrooms --max_it 10000
--tol 1e-7 --factor 8 --num_workers 20
```

where $factor$ stand for the multiplier of the theoretical stepsize.

3 Deep learning experiments

3.1 Running experiments:

An example of the command to run an experiment:

```
python3 EF21_100K.py --factor 8 --max_it 4545 --k 1320000 --batch_size 128
--model vgg11 --dataset CIFAR10
```