MLHEP2018 competition

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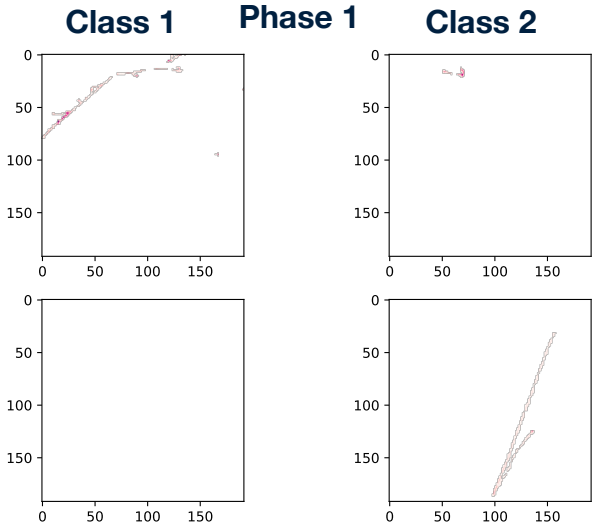
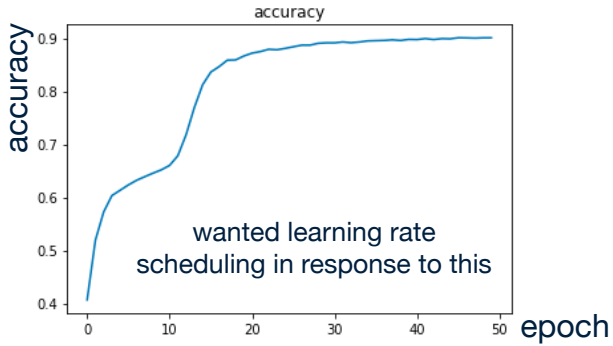
My experience

- **Things that worked:**
  - Just taking the **baseline MPNN** and tweaking parameters a bit
  - Bit of **data exploration** (mostly looking at 2d projections)
    - **More neighbours** to capture features (10->35->50->35)
  - **Longer training**
  - **More events to train** on (in practice -> RAM limited)
  - Switching to **nohup** because notebooks crashed occasionally
  - **Submitting a lot**



- **Things that did not work / not enough time:**
  - **Data augmentation** (rotating every event by 90/180/270 degrees)
  - **Learning rate scheduling** (cosine annealing?)
  - Figuring out how **online scores** relate to **validation set** results
    - Large differences, maybe related to limited set of events



My experience

#	SCORE
1	0.0
2	0.7970754957
3	0.8334549157
4	0.9218956659
5	0.9281952346
6	0.936517994
7	0.8064446881
8	0.934739764
9	0.936517994
10	0.9093152955
11	0.936517994

- Figuring out submission format (took most time in phase 1)
- Basic submission to confirm format
  - 800 events for training, 35 neighbors, 25 epochs
- 400 training events, 25 neighbors, 25 epochs
- Up to 50 epochs and 35 neighbors with 800 events
- Scaling up to 4k events, state updater to GRU
- **Down to 35 epochs to prevent overtraining too much**
- Checking that csv format works
- 50 neighbors and 7.5% dropout
- Restoring best model
- 25 epochs, back to 35 neighbors, 6.5% dropout, 6k evts
- Restoring best model

Making sure submission works

Optimizing structure

Attempts at further tuning, no success

Thanks a lot to the organizers for running the school and this competition!

I learned a lot, even though my approach to this competition included a lot of trial & error…