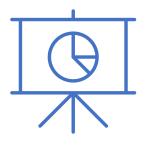
Introduction

Reasons for tuning parameters



training / inference time



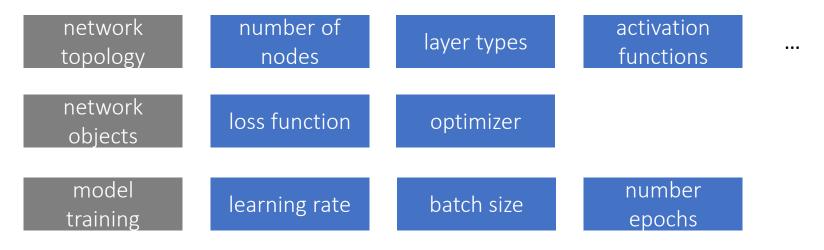
improving results



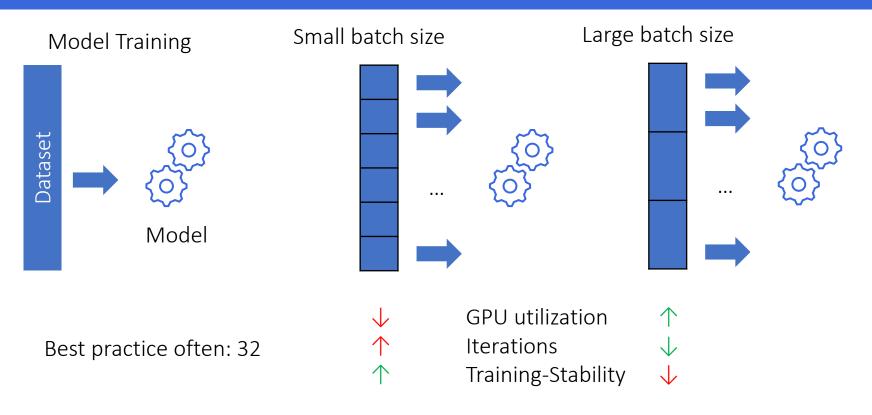
convergence

Tunable Hyperparameters

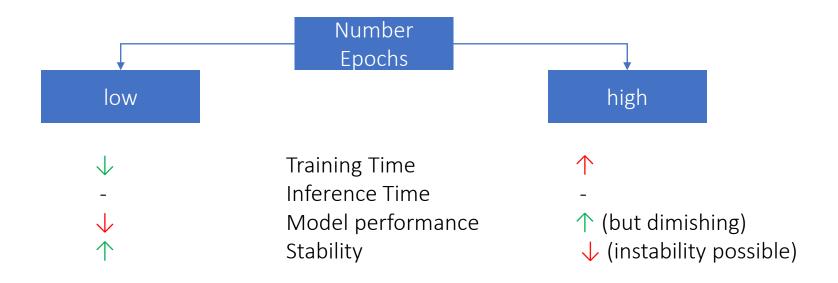
- Hyper-parameters huge impact on model performance
- Intuition...check multiple combinations of parameters and pick the best
- available packages: RayTune, Optuna, skorch
- Hyperparameters



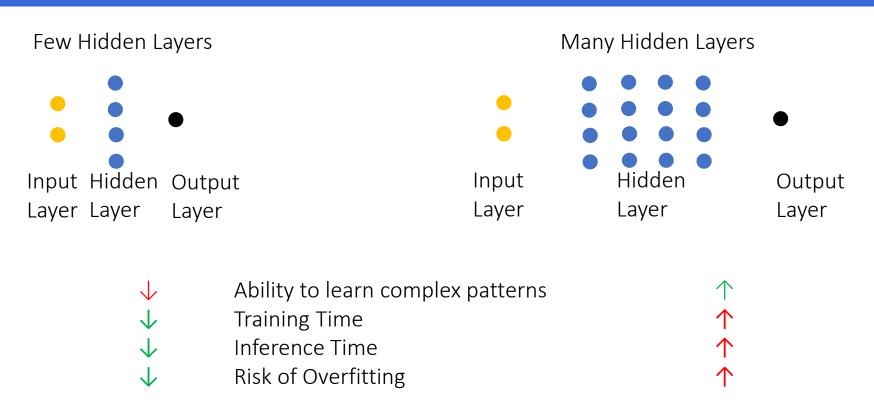
batch size



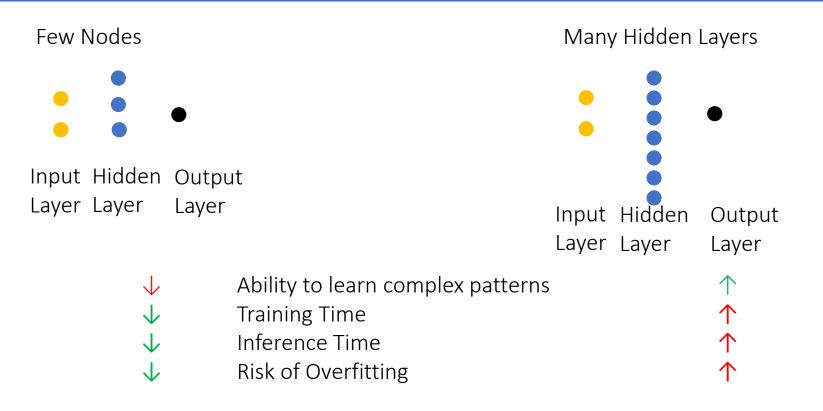
Epochs



Hidden Layers



Nodes within a Layer



Types of Search

- grid search
 - define search space (set of parameters with limiting values)
 - evaluate each possible combination
 - e.g. learning_rate = [0.1, 0.2],batch size = [2, 4, 8]
 - good for checking well-known parameters

- random search
 - picks a point from configuration space
 - good for discovery

Run	learning_rate	batch_size
0	0.1	2
1	0.2	2
2	0.1	4
3	0.2	4
4	0.1	8
5	0.2	8

skorch

- skorch...A scikit-learn compatible neural network library that wraps PyTorch.
- Repo: https://github.com/skorch-dev/skorch



- Works like a scikitlearn wrapper for PyTorch
- Can be integrated into
 - sklearn pipeline
 - grid search

```
from sklearn.model_selection import GridSearchCV

# deactivate skorch-internal train-valid split and verbose logging
net.set_params(train_split=False, verbose=0)
params = {
    'lr': [0.01, 0.02],
    'max_epochs': [10, 20],
    'module_num_units': [10, 20],
}
gs = GridSearchCV(net, params, refit=False, cv=3, scoring='accuracy', verbose=2)

gs.fit(X, y)
print("best score: {:.3f}, best params: {}".format(gs.best_score_, gs.best_params_))
```