H2O.ai

Pros and Cons of Deep Neural Networks

Pros

- non linear
- robust to correlated features
- learned features can be extracted

- can stop training at any time
- can be fine-tuned with more data
- great ensemble member
- efficient for multi-class problems
- world-class at pattern recognition

Cons

- slow to train
- slow to score
- not interpretable
- results not fully reproducible
- theory not well understood
- overfits, needs regularization
- many hyper-parameters
- expands categorical variables
- must impute missing values

What is H2O Deep Learning?

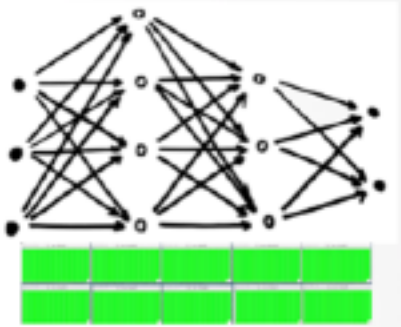
H2O Deep Learning:

Multi-layer fully-connected feed-forward Neural Network

+ **distributed** processing on multi-node clusters

+ **multi-threaded** speedup on multi-core CPUs

+ **fully featured** for **fast & accurate** results



all 320 cores on 10 nodes maxed out

(automatic standardization, automatic handling of categorical and missing values, train/test data adaptation, model initialization, activation functions, multiple loss functions, autoencoder, load balancing, auto-tuning, adaptive learning rate, rate decay, momentum, L1/L2 penalty, dropout, hyper-parameter search, N-fold cross-validation, checkpointing, early stopping, variable importances, feature extraction, realtime model inspection, optimizations for sparse data and networks, etc.)

= **Easy-to-use scalable Deep Learning for large real-world datasets**
(insurance, healthcare, finance, fraud, churn, risk, IoT, etc.)

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