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Introduction to TensorFlow

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Outline

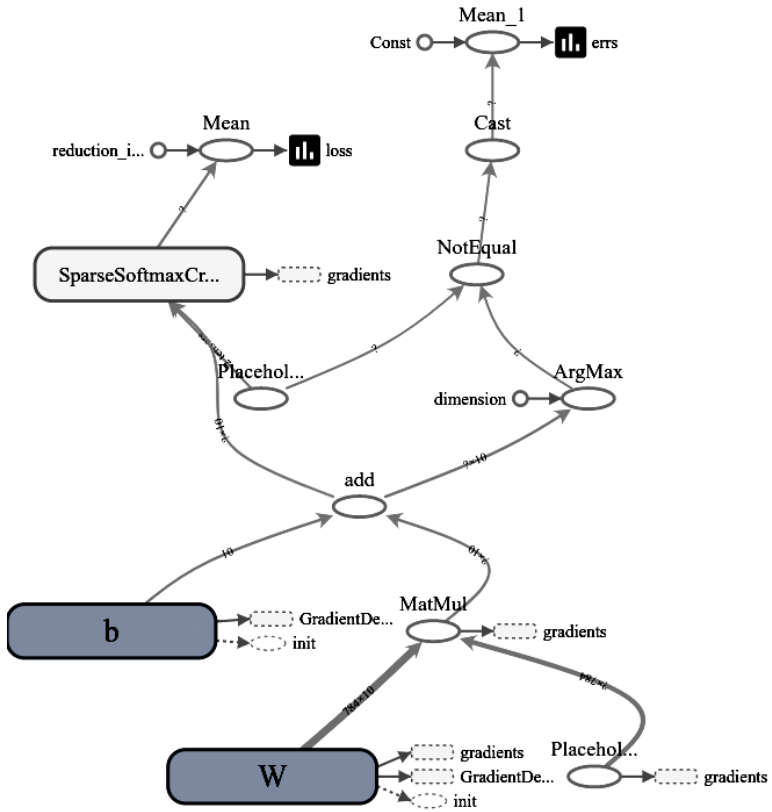
1. TensorFlow Example
2. Tipps & Tricks

Got TensorFlow?

- Install from: `http://www.tensorflow.org/install/`
- CPU and GPU version available
- Performance guide: `https://www.tensorflow.org/performance/performance_guide`

Computational Graph

- First, construct graph
- Graph defines computations
- Actual computations: later



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TensorBoard

- TensorFlow tool for visualization
- During training create and write out summaries
- Later look at the data in TensorBoard
- To run: `tensorboard --logdir=path/to/log-directory`
- Then open browser and open `computer_name:6006`
- Tutorial: `https://www.tensorflow.org/get_started/summaries_and_tensorboard`

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Tipps and Tricks 1

- `nvidia-smi`: show GPU load
- `htop`: show CPU load
- GPU memory usage: training data + model (keep in mind: batch size is also a hyperparameter, do not compare models with different batch size)
- Use data augmentations (rotation, translation, mirroring, scaling, gamma, etc.)
- Normalize your data

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Tipps and Tricks 2

- Hyperparameters: learning rate, batch size is also a hyperparameter
- Multiple runs: keep in mind that training is randomized, retrain model multiple times to be sure it is actually better then another model
- Visualize everything: look at your training data, what is passed into a batch, look at your results, not just final score