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Webpage for the lecture: `https://mathopt.de/TEACHING/2020OMML/`

Optimization Methods for Machine Learning

WS 2020 – 6. exercise sheet

Exercise 6.1 Computational Graphs with TensorFlow
Goals: *Get used to TensorFlow and create a Computation Graph*

1. Install `TensorFlow`: `https://www.tensorflow.org/install/`
2. Get the exercise template `ex06_temp` from our webpage `https://mathopt.de/TEACHING/2020OMML/` and go through the provided lines.
3. Run the provided code. What did you expect? Have a look at the computation graph in `tensorboard`.
4. Build a computation graph for $y = x \cdot (x^2 + x)$:
   - Have a look at `tf.multiply` and `tf.add`.
5. Build a computation graph for one transition step in a neural network, i.e. a weighted sum of inputs plus bias and an activation function call:
   - Use `tf.matmul` for matrix multiplication and have a look at the possible `TensorFlow` neural network activation functions in `tf.nn`.
6. Create nodes for computation of the loss function and the optimization:
   - Possible loss functions can be found in `tf.losses` and you can use `.minimize` function from various optimizer objects in `tf.train`.