

## **Problem Set 6, due April 3, 2020**

### **(Non-Convex Optimization)**

### **Theoretical Exercises**

Solve Exercises 33, 34 from the lecture notes.

### **Practical Exercises**

The theory of non-convex optimization is unfortunately not very illuminative. However, their practical performance is usually unmatched by convex methods. In this exercise, we will use the PyTorch framework to train a small neural network on some simple datasets.

#### **Problem 1 (PyTorch Refresher):**

If you run notebooks from your own computer, follow these installation instructions:

[pytorch.org](https://pytorch.org)

We recommend using the following online tutorial:

[pytorch.org/tutorials/beginner/pytorch\\_with\\_examples.html](https://pytorch.org/tutorials/beginner/pytorch_with_examples.html)

You can also refer to the following exercise from the Machine Learning course:

[https://github.com/epfml/ML\\_course/blob/master/labs/ex12/](https://github.com/epfml/ML_course/blob/master/labs/ex12/)

#### **Problem 2 (Simple Neural Network):**

Follow the notebook provided here:

[colab.research.google.com/github/epfml/OptML\\_course/blob/master/labs/ex06/template/Lab\\_6.ipynb](https://colab.research.google.com/github/epfml/OptML_course/blob/master/labs/ex06/template/Lab_6.ipynb)