HW 2: House Price Prediction

Read the story *Zillow and its iBuying Venture* posted on Blackboard.

1. You need to build a multilayer perceptron network to predict the sale prices of properties. A script *HousePricePrediction.ipynb* with starter code has been provided to you on Blackboard.

   There are two main tasks:

   (a) First, you will need to split the training data into training and validate data, and tune the model hyperparameters to optimize the model.

   (b) Then you will examine the profit of the iBuyer business model based on the predicted price on the validation data.

   You need to submit a report in pdf format containing the following materials:

   - A plot of the training errors and validation errors over epochs for a base multilayer perceptron model with 2 hidden layers of sizes 256 and 128.
   - A plot of the training errors and validation errors over epochs for a multilayer perceptron model with 4 hidden layers of sizes 512, 256, 128, 64.
   - A plot of the training errors and validation errors over epochs for a multilayer perceptron model with 4 hidden layers of sizes 512, 256, 128, 64 and dropout layers.
   - A table listing all the model hyperparameters that you have tried with the best validation errors that you obtained.
   - Your profit analysis of the the iBuyer business model based on the predicted price on the valid data and answers to the questions therein.

   You also need to submit the following file:

   - The complete python script containing all your code with explanations, along with a Markdown text explaining different parts if needed.