Machine Learning HW2

Logistics

Due date: 11/19 (Sun) 23:59

Submission

- Via LMS (no email submission)
- **TWO FILES** (Report, Zip of your code)

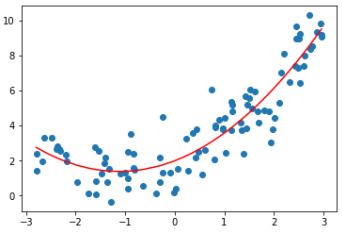
Problem Description: Neural network as a function approximator

Your goal is to design a neural network to approximate a function that can describe the given data. The dataset has two sets of values: one (the first column in the given file) is x, and the other one (the second column) is y (y=f(x)). After designing your own model and training, find its best parameter set. You must provide both the model and the weights.

Report

Any format, no template. But the followings must be included:

1. Introduction (Background)
2. Design
   A. Main Idea
   B. Program description (comments on important code lines), Dev. Environment, …
3. Evaluation Results
   A. Evaluation Setup
   B. Training/Validation error.
   C. Final Model and Parameters: Draw your model and give the best parameters. You can use a table, snapshot, file, or anything else to provide the best model parameters.
   D. A set of snapshots (of progress, final result, and etc.) (example below)



4. Conclusion.

Implementation Guide

1. No restrictions on programming languages and platforms.
2. Your program takes a data file as input.
3. Please do not spend too much time on implementing basic numerical operations. Just import existing math libraries.
4. But, you MUST implement **your own** gradient descent algorithm and backpropagation.
   A. DO NOT USE the existing deep learning frameworks such as tensorflow.