Deep Learning: Day 1

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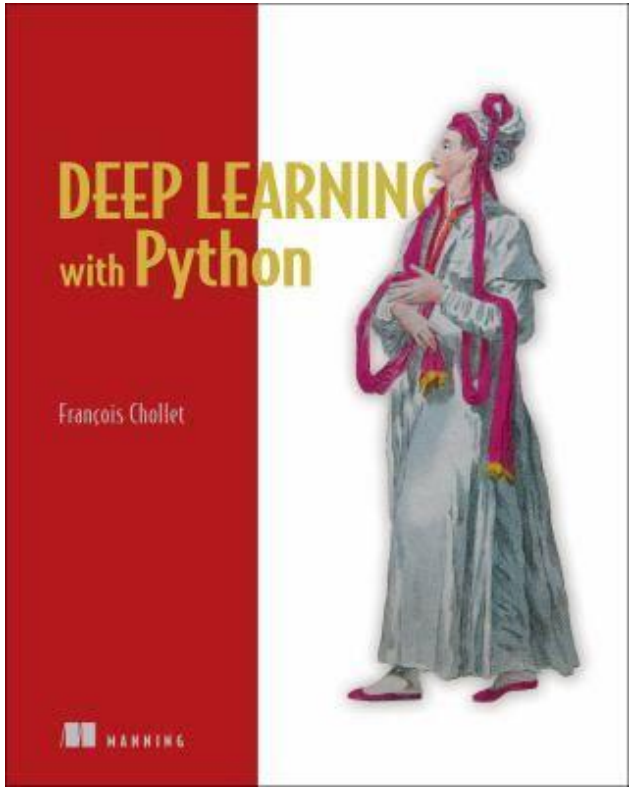
Topics

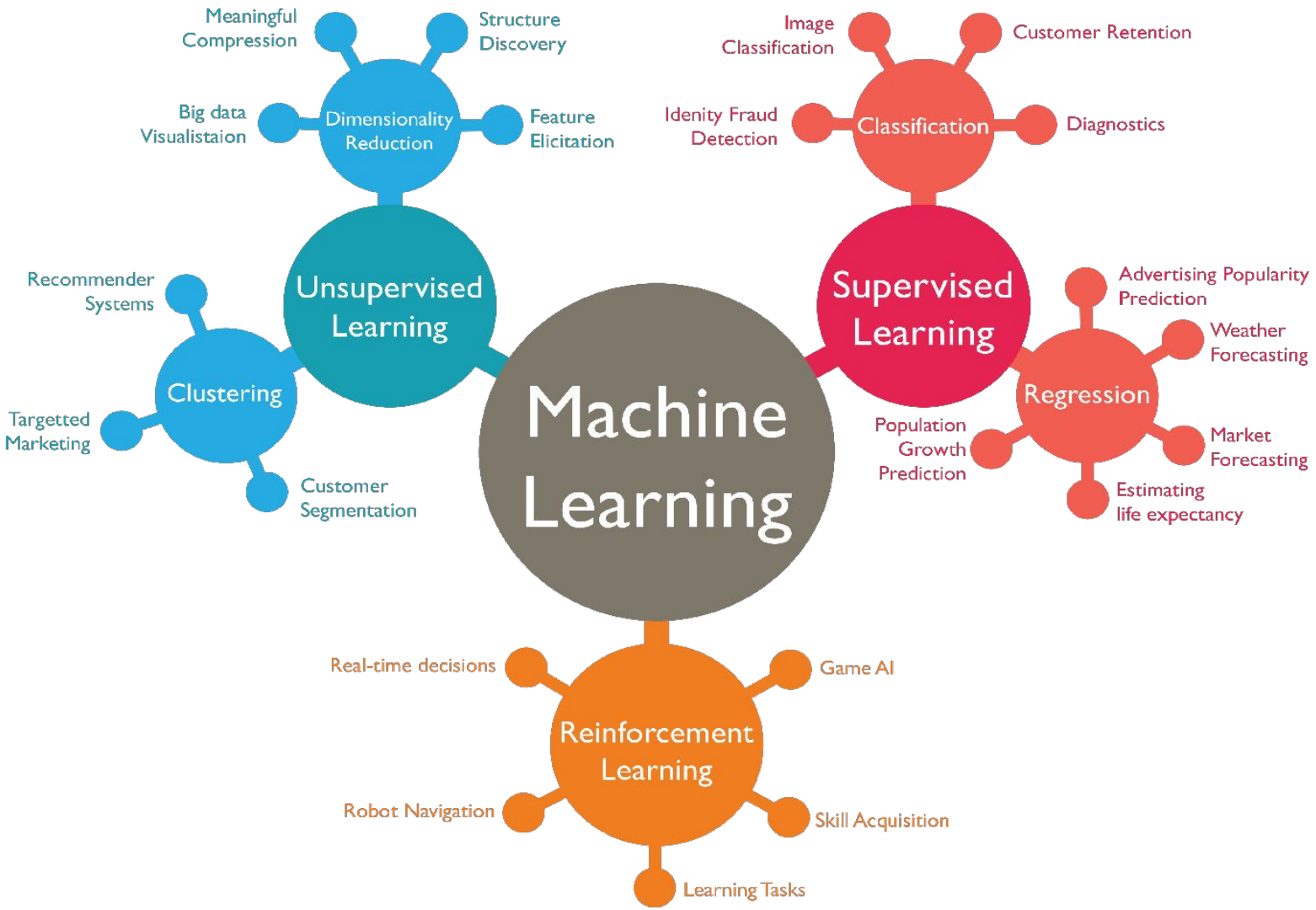
- Join Slack & Github
- Deep Learning Book
- Machine Learning
- Supervised vs Unsupervised
- Mathematics
- High Level Deep Learning
- Laptop Preparation
- Build Single Perceptron (Regression)
- Build Multilayer Perceptron (Regression)
- Keras and Tensorflow
- Simple Linear Regression with Keras

Join Slack & Github

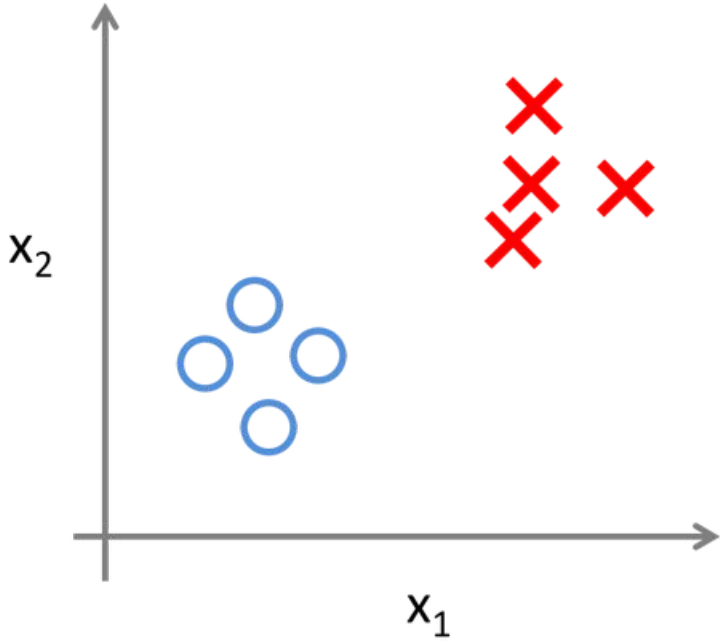
- Slack
- http://bit.ly/2MBmC7m
- Github
- http://bit.ly/2MCnhWc

Deep Learning Book

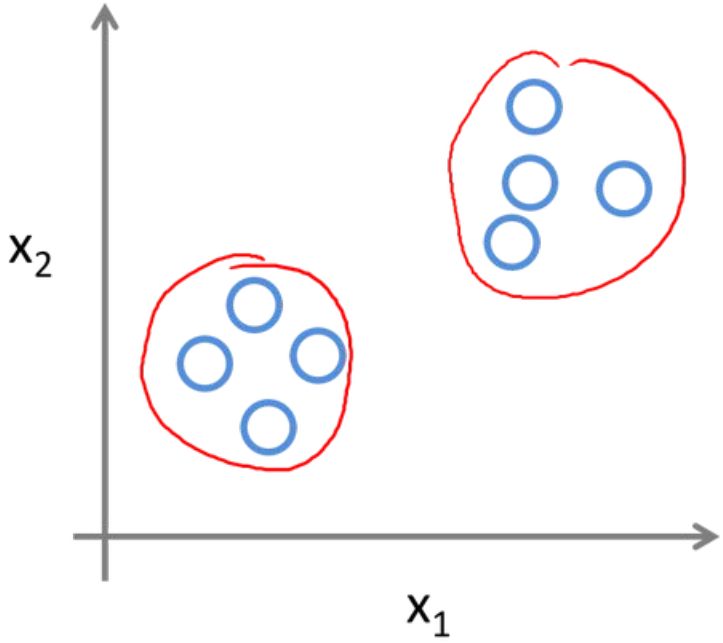



Machine Learning
Unsupervised Learning
Dimensionality Reduction
Meaningful Compression
Structure Discovery
Big data Visualistaion
Feature Elicitation
Clustering
Recommender Systems
Targetted Marketing
Customer Segmentation
Supervised Learning
Classification
Image Classification
Customer Retention
Idenity Fraud Detection
Diagnostics
Regression
Advertising Popularity Prediction
Weather Forecasting
Market Forecasting
Estimating life expectancy
Population Growth Prediction
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks

Supervised Learning



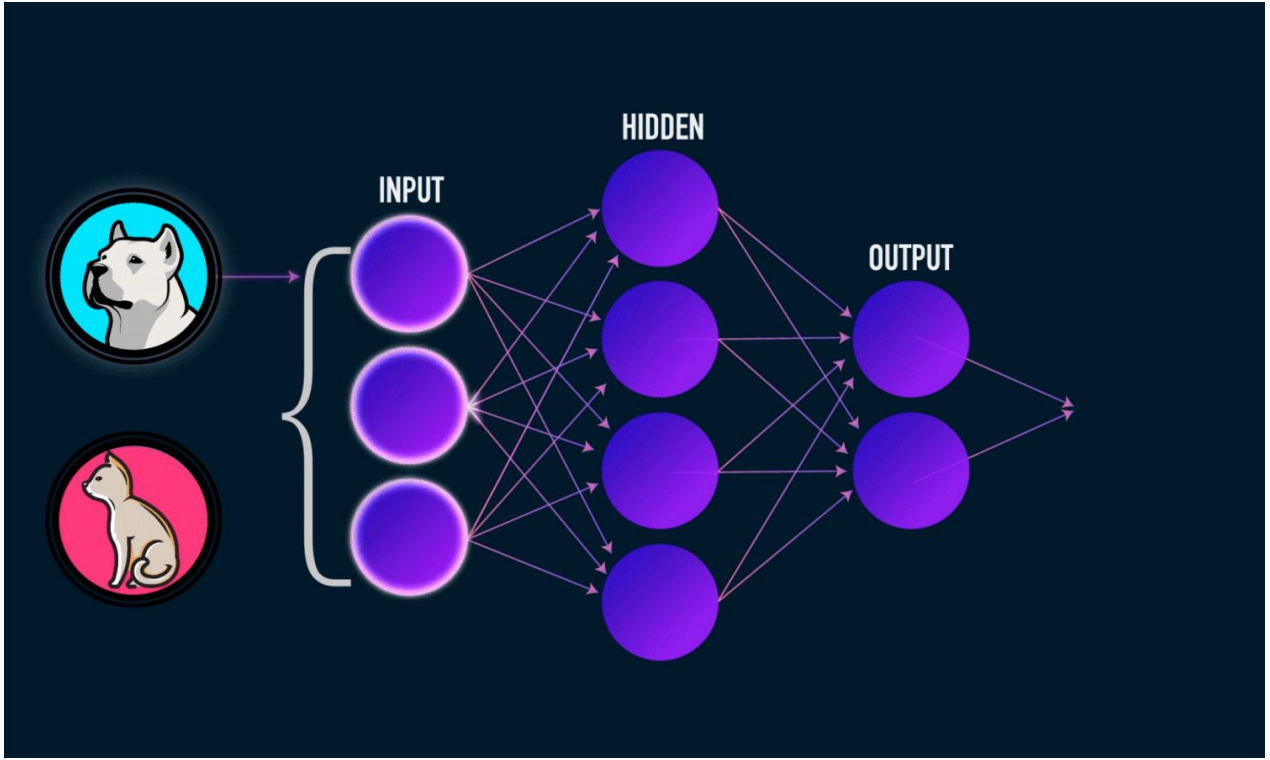
Unsupervised Learning



Mathematics

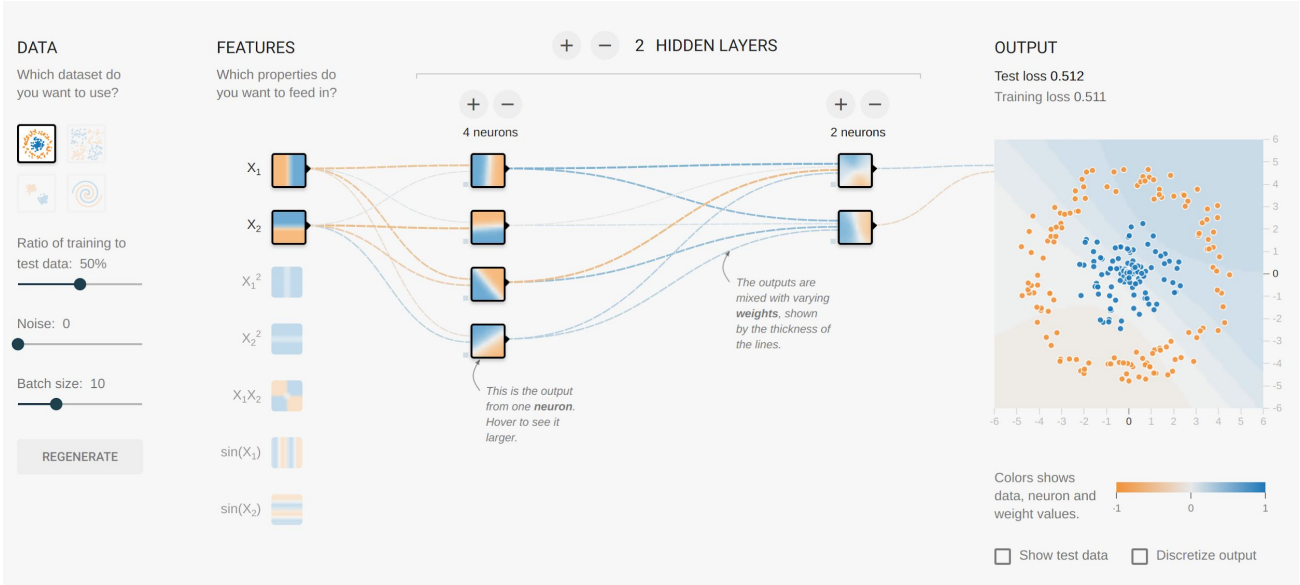
- Algebra
  - Solving polynomial equations
- Linear Algebra
  - Scalars
  - Vectors
  - Matrices
  - Tensors
- Calculus
  - Derivatives
  - Partial Derivatives

High Level Deep Learning

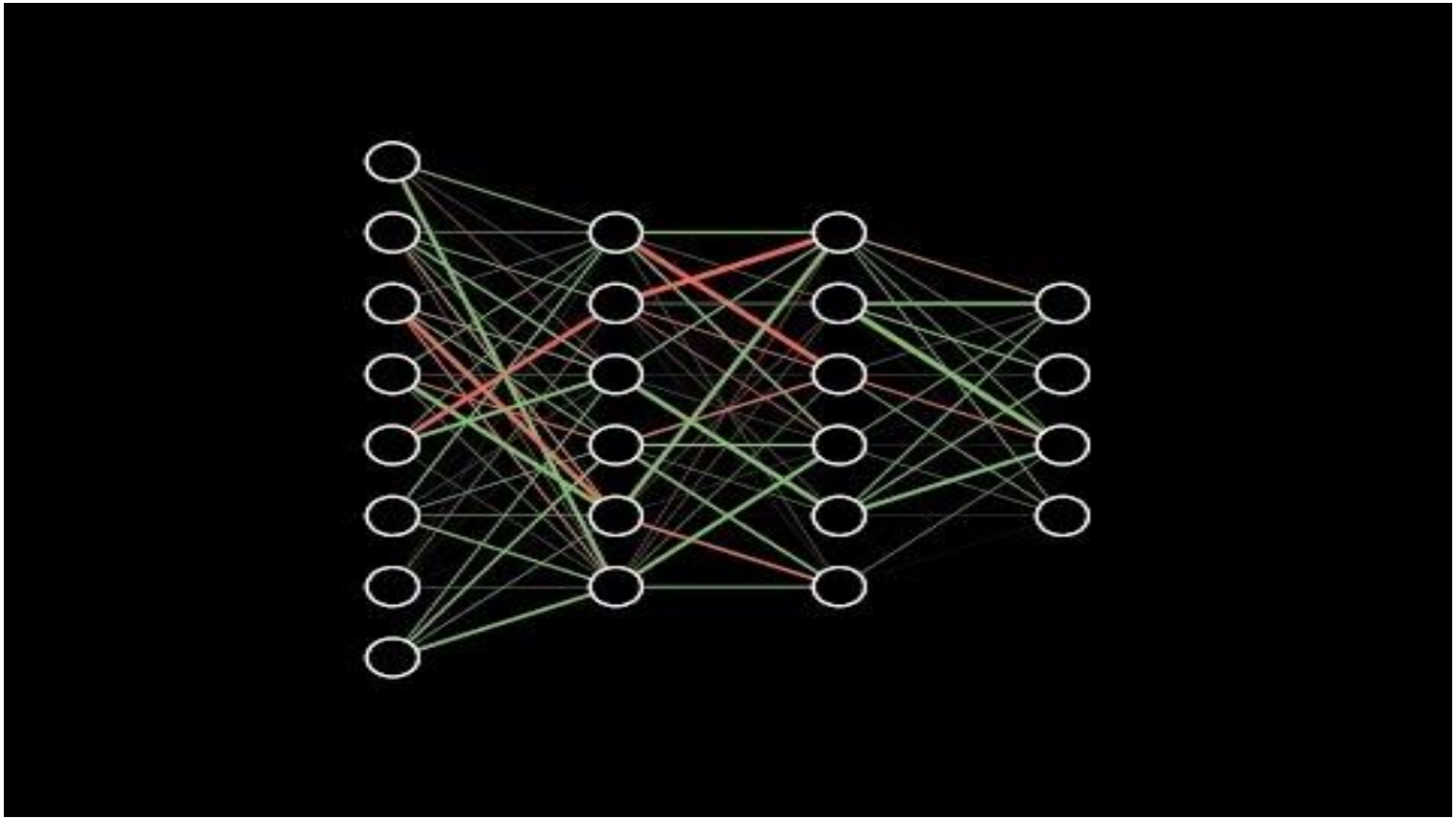


High Level Deep Learning

- https://playground.tensorflow.org/



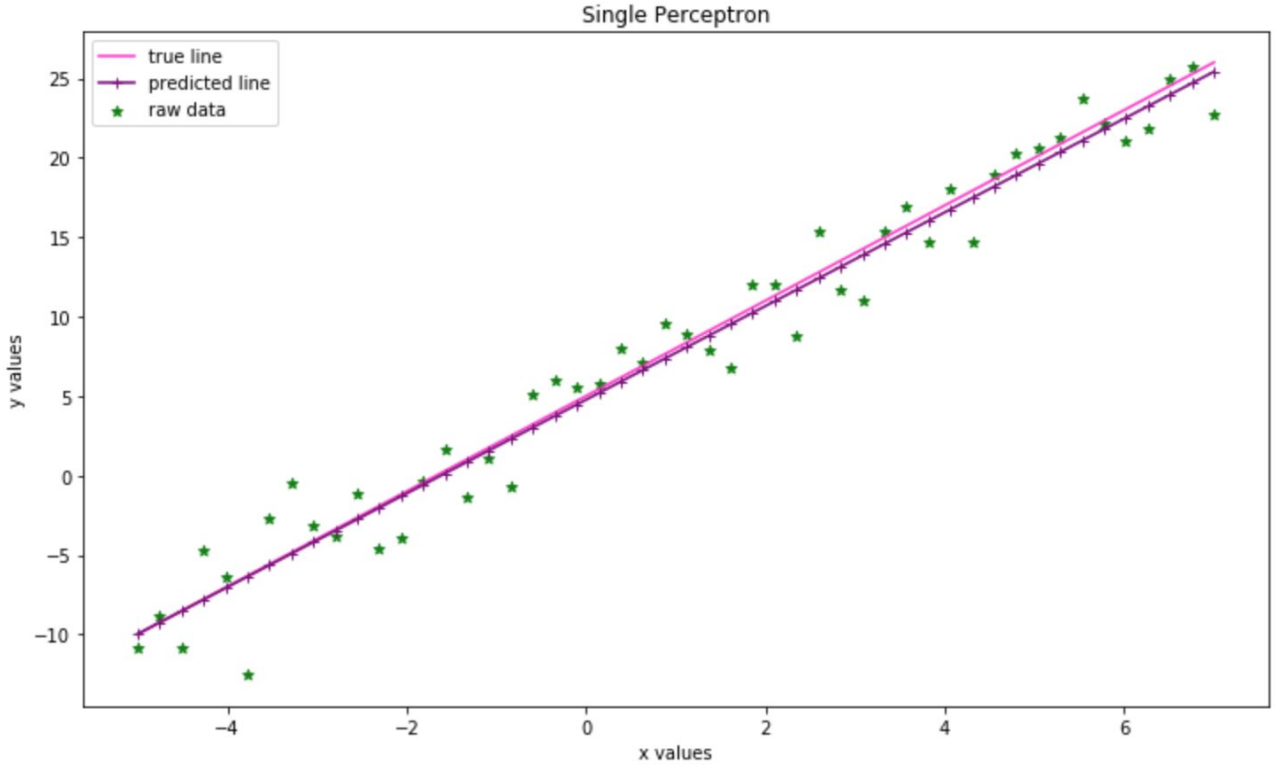
https://www.youtube.com/watch?v=aircAruvnKk



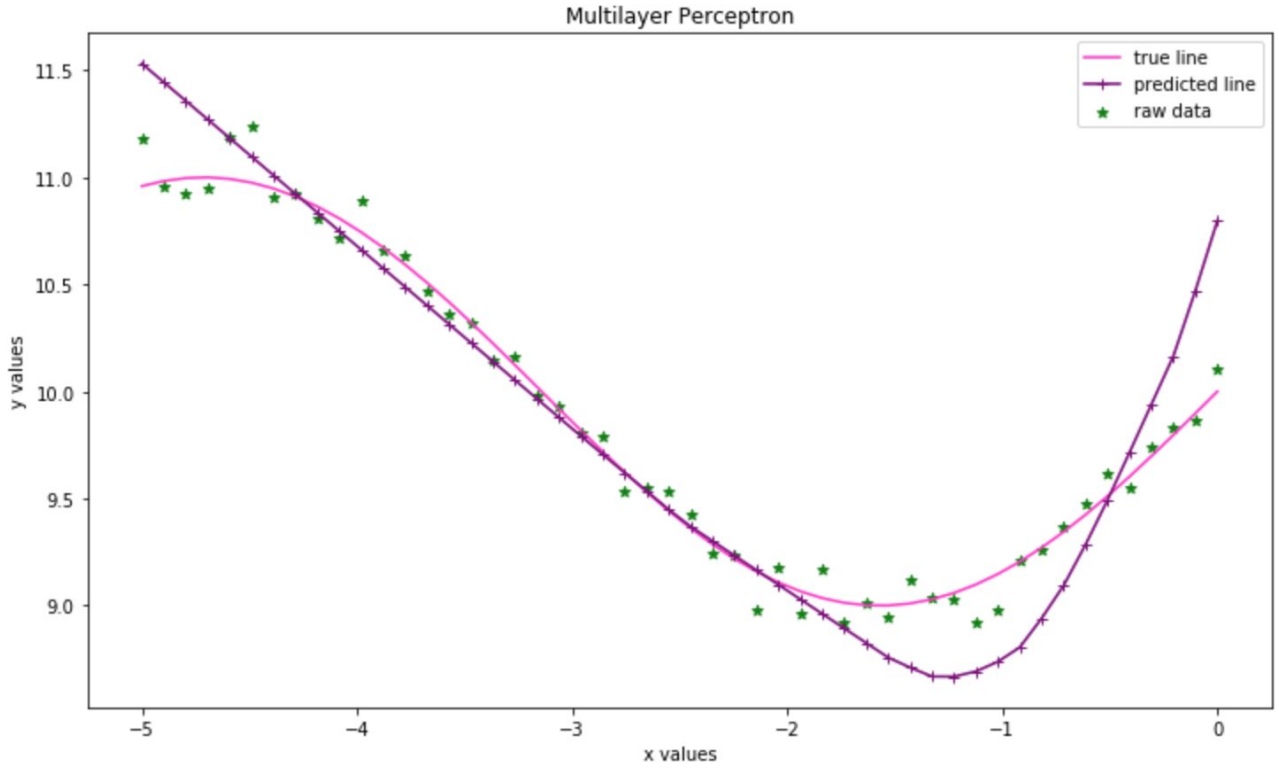
Laptop Preparation

- Laptop
  - Preferably Mac or Linux
  - Windows with a Linux Virtual Machine
  - Windows 10 with Bash
- Python 3.6
  - https://conda.io/miniconda.html
  - conda install numpy pandas matplotlib jupyter jupyterlab
- Code editor
  - https://code.visualstudio.com/
- Terminal
  - https://hyper.is/

Build Single Perceptron (Regression)

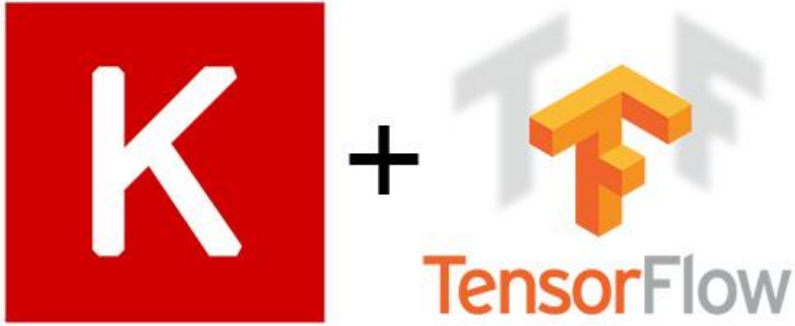
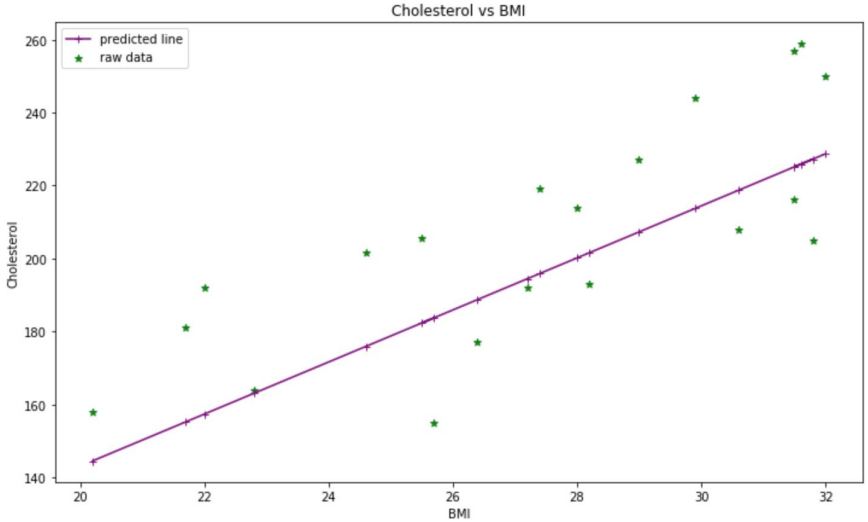
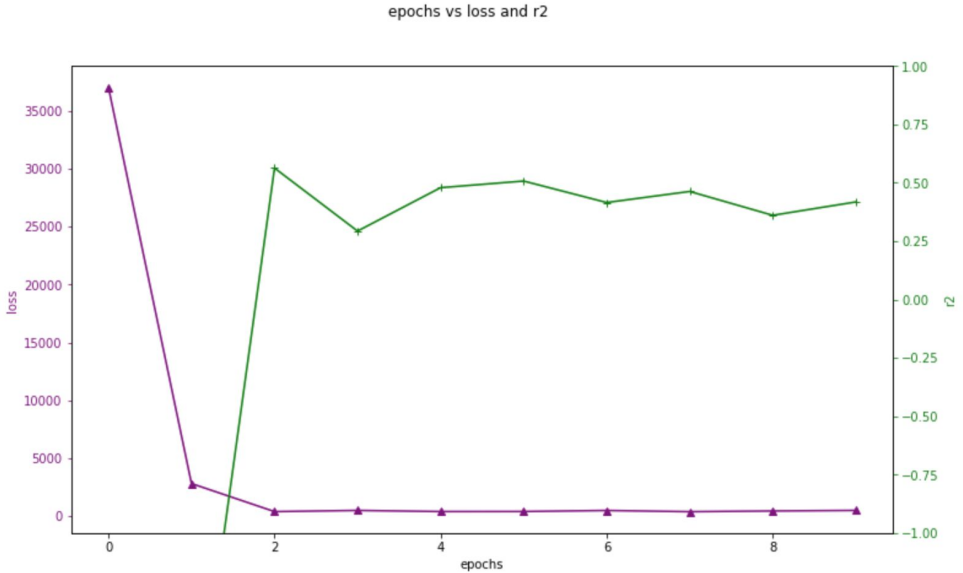


Build Multilayer Perceptron (Regression)



Keras and Tensorflow

- https://www.tensorflow.org/
- An open source machine learning framework for everyone
- https://keras.io/
- Keras is a high-level neural networks API, written in Python and capable of running on top of TensorFlow, CNTK, or Theano. It was developed with a focus on enabling fast experimentation.



Simple Linear Regression with Keras