Artificial Intelligence (10-12 Weeks)

1. Introduction to Machine Learning
   - What is Machine Learning?
   - Fundamental of Machine Learning
   - Key Concepts and an example of ML
   - Supervised Learning
   - Unsupervised Learning
2. Linear Regression with one variable
   - Model Representation
   - Cost Function
   - Parameter Learning
   - Gradient Descent
3. Linear Regression with Multiple Variable
   - Computing parameter analytically
   - Ridge, Lasso, Polynomial Regression
4. Logistic Regression
   - Classification
   - Hypothesis Testing
   - Decision Boundary
   - Cost Function and Optimization
5. Multiclass Classification
6. Regularization
   - Overfitting, Under fitting
7. K-Nearest Neighbour – Classification and Regression
8. Support Vector Machine
   - Introduction to Naïve Bayes, Random Forest
   - Model Evaluation and Selection
9. Confusion Matrix
10. Precision-recall and ROC curve
    - Regression Evaluation
11. Boosting Algorithms
12. Unsupervised Learning
    - Clustering
    - K-mean Algorithm
13. Dimensionality Reduction
    - Principal Component Analysis and applications
14. Recommender Systems
    - Association Rule based
    - User-based Collaborative Filtering
    - Item-based Collaborative Filtering
    - Content-Based Filtering
15. Introduction to Deep Learning and Toolchain
    - Perceptron
    - Gradient Descent and Backpropagation
    - MLP as classifier (Multi Layer Perceptron)
    - Convolution Neural Networks
    - Recurrent Neural Networks
16. AI applications (NLP/Chatbot)

17. AI applications (Vision/Image Recognition)
18. AI project (NLP or Vision)