Credit Card Fraud Detection

❖ Timeline

Week	Work
Week - 1	Google collab, Python basics, Numpy, Pandas
Week - 2	ML basics, Previewing Data, EDA
Week - 3	Testing Classifiers like logistic regression, SVM, Naive Bayes, Decision Trees, etc
Week - 4	Dealing with imbalanced data - Oversampling, Undersampling, SMOTE
Week - 5	Neural Networks Testing
Week - 6	Report and code submission

Week 1

- Google Colab Basics : - Link (Watch 1-4 videos)
- Variable, Datatypes in Python :- Link (4th and 10th videos)
- Lists, Tuples, Arrays, Dictionaries, Sets :- Link (5th, 6th, 26th, 27th videos)
- If else, For-While loops:- Link (19, 20, 21, 22, 22.1 videos)
- If else, For-While loops:- Link (19, 20, 21, 22, 22.1 videos)
- Functions :- Link (32, 33, 34 videos)
- Classes :- Link (32, 33, 34 videos) (You just have to understand when you see one)
- Numpy :- [Link] [cheatsheet] [doc] (28, 29, 30, 31 videos)
- Pandas :- [Link] [cheatsheet] [doc]
- Matplotlib/Seaborn :- [Link] [cheatsheet] [doc- Matplotlib] [doc- Seaborn]

Week 1 assignment:- Week1_assignment

Week 2 +3

Basic ML:-

- What is ML? What are different kinds of ML tasks :- Link (Lecture 1.1-1.3)

- Optional : Basic algebra, Matrix operations :- Link (Lect 3.1-3.6) (No need if you remember basic algebra of Class 11-12)

Since we are having a classification task, Resources will be related to that.

Training :-

- Gradient Descent: - Link (C1W2L04)

- Learning with large datasets : - Link (Lecture 17.1)

- Stochastic Gradient Descent: - Link (Lecture 17.2)

- Mini batch gradient descent: - Link (Lecture 17.3)

- Stochastic Gradient Descent convergence : - Link (Lecture 17.4)

- Train-Validation-Test sets : - Link

- Bias/Variance : - Link Andrew Ng link (C2W1L02)

- Tackle High Bias / High Variance :- Link (C2W1L03)

- Regularization : - Link (22,23,24,26) Andrew Ng playlist (Lec 7.1 - 7.3) (Watch anyone of this link you like)

Classifiers :-

- Logistic Regression :- Link (C1W2L01+ C1W2L02 + C1W2L03)

- Logistic Regression Python Implementation :- Link (go directly to implementation part)

- Support Vector Machine :- Link

- Decision Trees with Python implementation :- Link

- Random Forest with Python implementation :- Link

- XGBoost with Python implementation : - Link

Metrics: -

- Intro to error analysis : - Link (Lec 11.2)

- True Positive/Negatives, Precision, Recall : - Link (Lec 11.3, 11,4)

- F1 Score : - Link (C3W1L03)

Project - Tasks

Week 4