Roadmap to Data Science and Machine Learning (RDScML)

An exhaustive study guide to learn machine learning concepts from scratch. It focuses on preparing an individual through detailed exploration and hands-on implementation of the concepts. The concepts are to be learned by solving the issues that are brilliantly crafted by experienced personnel. Post this, there are three major projects:

1. Great Energy Prediction
2. COVID-19 Visualization
3. Quora Insincere Questions Classification

These projects on solving would reflect the detailed knowledge and understanding of three main data science aspects:

1. Algorithmic Knowledge
2. Building Visual Deliverables
3. Natural Language Processing Applications

GitHub

All contributions to the project will be made on: https://github.com/archisha-chandel/RDScML

Timeline

The following timeline can be followed by any learner. It is highly recommended to study these topics by reading articles on Medium, Towards Data Science, IEEE research papers and other scholarly articles. Popular YouTube channels can also be followed, like

1. Machine Learning Recipes with Josh Gordon
2. Natural Language Processing Zero to Hero by Laurence Moroney
3. Deeplearning.ai
4. Machine Learning- Andrew Ng, Stanford University [full course]
5. StatQuest with Josh Starmer

Week 1-4 covers the basic prerequisite. This can be skipped if you are not a beginner in this field.

Week 1: Getting started with Python
Week 2: Manipulating data using Pandas and NumPy
Week 3: Data visualisation techniques
Week 4: Concept Application I: Solve the Great Energy Prediction problem statements (perform data exploration only)

Week 5: Probability and Statistics
Week 6: Linear Models
Week 7: Regularisation
Week 8: Concept Application I: Complete solving the Great Energy Prediction problem statement

Week 9: EDA and Feature engineering
Week 10: Classification models
Week 11: Decision Trees
Week 12: Concept Application II: Solve COVID-19 visualisation problem statement

Week 13: Ensemble methods
Week 14: Clustering Algorithms
Week 15: Support vector machines
Week 16: Introduction to NLP

Week 17: Topic modelling
Week 18: Sentiment analysis
Week 19: Concept Application III: Solve the problem statement on Quora Insincere Questions Classification
Week 20: Concept Application III: Solve the problem statement on Quora Insincere Questions Classification (cont.)