BEING ARTIFEX - ML/AI

Machine learning (ML) is the study of computer algorithms that can improve automatically through training by using previous data. It is seen as a part of artificial intelligence. Machine learning algorithms build a model containing various parameters, based on training data, and then by calculating various losses and derivatives, it improves its parameters so that predictions become more and more accurate at each epoch. Machine learning algorithms are used in a wide variety of applications, such as in medicine, email filtering, speech recognition, and computer vision, where it is difficult or unfeasible to develop conventional algorithms to perform the needed tasks.

Basic Knowledge of Python

Machine Learning algorithms are majorly written in Python, so you need to have a basic to intermediate knowledge of the language and the libraries used. This should take 1-week maximum to attain a good level of understanding of Python.

- Python Courses
  - ☐ Lectures by Sentdex
  - ☐ Python Course by University of Michigan: https://www.coursera.org/specializations/python
  - ☐ Programming with Mosh (Youtube): https://www.youtube.com/watch?v=_uQrJ0TkZlc

- To implement the machine learning algorithms in Python language, you need to learn the following modules:
  - ☐ Numpy and Pandas: These libraries are used for heavy computation like advanced matrix multiplication and linear algebra. : Course
  - ☐ Learn NumPy from youtube playlist: Numpy(Youtube)
  - ☐ Matplotlib: This library is used for the visualization of the performance of machine learning models, plotting graphs, etc.: Introductory course | Reference
  - ☐ You can also prefer documentation and StackOverflow for understanding any ML algorithm.

ML Courses (Supervised + Unsupervised)

- Start Machine Learning with the most basic course in Coursera by Andrew ng. This course covers all the mathematical functions that are needed for machine learning algorithms like loss function, finding derivatives for gradient descent etc. (This course uses Matlab/Octave instead of Python): Machine Learning course

- Youtube Channels
  - [ ] Spring 2015-Statistical Machine Learning
  - [ ] Machine Learning by Udacity
  - [ ] Data School - For the data science part
  - [ ] Statistical Machine Learning
  - [ ] Krish Naik Machine Learning Playlist

- Complete mlcourse.ai

Types of ML algorithms

- Linear Regression: Article | Lecture
- Logistic Regression: Article | Lecture
- SVM (Support Vector Machines): Article | Youtube
- Neural Networks: Article | Youtube
- K-Means Clustering: Youtube
- KNN (K-Nearest Neighbours): Article | Youtube
- Decision Trees: Article | Youtube
- Naive Bayes: Article | Youtube

Machine Learning Libraries

After you have learned these basic ML algorithms, now you should learn dedicated libraries which are broadly used in most machine learning algorithms.

- scikit-Learn
- TensorFlow | Keras Documentation
- Pytorch
- OpenCV - This library is basically used for computer vision and thus deals with image data.

Learn to make ML models from scratch

Start making ML models by following courses in Jovian. This site has various courses which

will use PyTorch library for making ML models. They have shown how to make high accuracy ML models with MNIST, cifar10 dataset,s and also used datasets from Kaggle. They use google collab for writing the ML codes.

Practice

Following are various sites and platforms to practice your skills and try your understanding of Machine Learning on real-world datasets and problems.

- Kaggle
- Analytics Vidhya
- HackerEarth

Deep learning

- Deep Learning specialization by Andrew Ng
- Book on Neural Networks
- Practical Deep Learning for Coders
- Natural Language Processing
  - [ ] CS 224N - NLP (Natural Language Processing)
  - [ ] Stanford CS224D
  - [ ] NLTK. : Widely Used library for NLP applications
- Reinforcement learning
  - [ ] RL course
  - [ ] CS229 Machine Learning by Stanford University (Lectures 16-20)
  - [ ] Reinforcement Learning Book , source code for the book
- Computer Vision - CNN
  - [ ] CS 231N - CNN (Convolutional Neural Networks)

Blogs on Machine Learning

- Towards Data Science
- Machine Learning Mastery
- Analytics Vidhya

Deployment of ML models

- Docker
- FastAPI
- Flask

Extras

- Data Science - Data Analysis
- Data Scraping - Selenium, Scrapy, BeautifulSoap
- Data Visualization - Bokeh
- Matlab
- Big Data - Hadoop, Apache Spark, Scala

Tips and Tricks

- Be part of the community
- Kaggle - Team up
- Freelance - Upwork, Fiverr
- Internshala
- Linkedin - get connected with people who are in the same field

Other Resources

https://medium.com/machine-learning-in-practice/my-curated-list-of-ai-and-machine-learning-resources-from-around-the-web-9a97823b8524

Financial aid for Machine Learning for Coursera

Educational Background: Some college
Annual Income : 0
Employment status: Student
How much can you afford to pay? : 0

Why are you applying for Financial Aid?

1.

I am studying engineering 2nd year. My family has a low annual income and I need to pay a huge amount of fees to our university for studies. I am very interested in studies but it is difficult to manage the burden of money that needs to be spent for my studies as we have some loans to be repaid. I am in no situation to pay any amount for other coaching or such practice sheets. But I want to learn a subject additional to what my college teaches. But considering my financial situation it is difficult for me to pay the amount that has been asked for in order to complete the course on your website. That is why I am applying for financial aid. It would be very helpful if my request for financial aid is accepted. It would help me in my studies and reach my goals.

2. How will taking this course help you achieve your career goals?

I want to take this course as I want to learn Machine Learning. I want to complete the course due to my curiosity and also that I can put a good CV to get applied to a job. This course will boost my job prospects after graduation from my institute. It will help me perform better in carrying out various programs in a computer language and give me an edge over my competitors. A verified certificate will attach credibility to the certificate I receive from this course. I plan to complete all assignments on or before time. Also, I intend to participate in Discussion Forums, which I have found to supplement my learning immensely in the other online courses I have taken on Coursera. I also plan to grade assignments that are peer-reviewed which I believe will be an invaluable learning opportunity.

3. **If you answered no, please help us understand why.**

Sir, the financial status of the family is not too good to pay the amount. We already have a lot of dept in the bank and my parents are paying it on a regular basis. It would make their life even harder to add a new money pressure over them. Sir, I don't want to put any pressure on them. Sir, it would be a great help for me to get a good job and help my family if I'm able to get this course.