



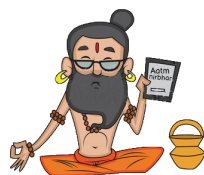
Complete Report on Aatmanirbhar Program

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Initiative taken by Skillship Foundation

Date: 10-10-2020

The Aatmanirbhar project is an initiative to make today's generation self-dependent concerning technology. This is a 3-month long project which focuses on educating as well as giving practical experience in different fields of technology. The main goal is to provide effective communication between the mentors and the mentees. We also have industry experts to guide the student and help them choose their careers according to their field of interest. A 3-month extensive program stretching across four domains which will not only help participants learn new things but also connect them across to highly qualified, experienced industry professionals. A 1.5 month total learning process followed by a 1.5-month tenure of a capstone project, with personally allotted mentors who will guide them regularly. A highly competitive, informative, and interactive learning experience, it is aimed to make sure the participants learn and then apply those learning to projects to build amazing things!



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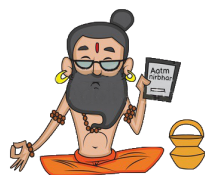
Data Science | Machine Learning | Competitive Programming | Python Programming

The program will be launched from June 1st and will be kickstarted by an orientation, that will be held in the form of a panel discussion, in which members of the Advisory Board will be participating. They will be explaining to the mentees how the program will proceed, and also let them know about the various opportunities such as internships, networking with industry professionals and so on that await them if they can persevere through the three months and build a complete project. The IPR experts in the advisory board will also ensure that if the participants build a deserving project, then they can get it trademarked for free only the Govt Fee would be charged. All of this information shall be put forward at the very beginning to motivate the mentees to see the program through its very end.

One of the most important tracks of the aatmanirbhar program was **“Hands-on Python.”** Miss Rutuja Kawade mentored this track. It dealt with all the basic to advanced concepts of python. Here is the detailed workflow of this track.

Week-1 covered all installation processes like Jupyter notebooks, anaconda, vs code, etc. All basic concepts of python were covered, syntax and semantics, methods, and functions. Problem-solving on the concepts taught was an integral part of the python track. Week-2 dealt with the basics of procedural programming, and all Python Data Structures, their real-time implementation in the world of data science and machine learning. Week-3 covered Introduction to Python Libraries, Hands-on Numpy, and implementation of NumPy for data analysis and EDA. Week-4 dealt with advanced pandas concepts from importing a CSV file to working with real-time big data with pandas.

The 2nd month of this program focussed on core python for big data. The real-time use and its implementation of python advanced concepts were

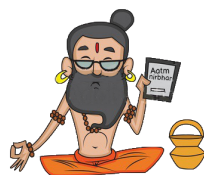


introduced. Week 5 dealt extensively with data visualization techniques, plotting with matplotlib, and working with the seaborn library which is considered as some of the most powerful libraries of python. Week-6 was extensively for skipy, sci-kit-learn, and Exploratory Data Analysis. With this, we concluded Phase 1 i.e the learning phase. Problem-solving on the concepts taught was an integral part of the python track.

Phase-2 was purely for the capstone project implementation. The mentor gave a few topics for the capstone project and guided the mentees throughout the journey to get hands-on with python. Topics of phase-2 were Handwritten Digit classification using MNIST Dataset, Sentimental Analysis of Twitter, or any other social media, Exploratory data analysis of COVID'19, Student Innovation was also appreciated. The above problem statements, mentees were free to use any dataset unless specified in the question. One needs to complete and submit the GitHub link of at least a project on or before 25th August 2020. The capstone project is a mandatory step to be eligible for certifications. Also, the best projects with extra-ordinary innovation will be interviewed by the experts and will be eligible for internships.

One of the very interesting tracks in the aatmanirbhar program is the **"competitive programming" track**. The mentor is **Ms. K. Sai Drishya**.

The program got kick-started with an orientation session discussing the agenda of the program in its entirety, goals, ambitions, etc. The program is for students/learners with beginner to intermediate knowledge in competitive programming. The foundation was laid strong concerning data structures and algorithms as it is quite essential to progress as a competitive programmer. All the data structures starting from arrays, strings, linked lists, stacks, queues, graphs, and trees were covered; mathematical concepts such as number theory, combinatorics were covered as well. And once this was grasped, popular or the



most used techniques of programming such as greedy and dynamic programming were discussed.

Once this was done since it is competitive programming, there was no capstone project, but a list of tasks to get their profiles on various platforms such as CodeForces, LeetCode, HackerEarth get shined. The tasks included taking part in weekly completions and code wars. And of course, every week meetings were conducted to discuss the doubts.

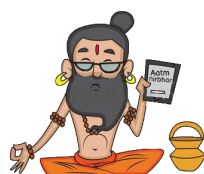
One of the major Track **“Data Science”** was mentored by **Mr. Manan Modi**. The program focuses on teaching Data Science from scratch. Students are introduced to Python and pre-existing libraries for Data Science. The program covers the printing “Hello World!” program to the depths of Data Science.

After the participants get accustomed to Python for Data Science, then in Week 2 and 3 they will be taught about the libraries used like NumPy, and pandas. These tools help in data structures and high-performance data analysis.

The course then proceeds forward to Exploratory Data Analysis(EDA).

Exploratory Data Analysis is the process of analyzing data and bringing out key characteristics. It gives insight into the data. EDA is an important part of identifying Correlations, Causations to form models.

After equipping participants with the required knowledge of EDA, In the week 4-5, the students will be taught about Supervised and Unsupervised Machine Learning Algorithms and week 6 will continue with Neural Networks, Convolutional Neural Networks and how they can be used in Machine Learning for Real life. This program equips the students with the tools required for making a vast variety of projects in the field of Data Science. To give an idea of real-time projects, the participants will be given time to work on a capstone project that is relevant in these testing times. They are given a capstone project on identifying Employee performance and using it to help HR in downsizing employees.



Another important track of the aatmanirbhar program was **“Hands-on Machine Learning.” Miss Mahisha S mentored this track.** It dealt with all the basic to advanced concepts of Machine Learning. Here is the detailed workflow of this track. Week-1 covered all installation processes like jupyter notebooks, anaconda, vs code, etc with the basics of pre-processing. Week-2 was basic concepts of Regression and in detail of Linear regression and Logistic Regression. In the upcoming week’s Support Vector Regression, Decision Tree, and all about regression and its evaluation models.

The 2nd month of this program focussed on more topics of machine learning which was covered with relevant project examples. The MIT Videos of KNN were explored in detail with code explanation and the importance of CAP Curve and its analysis was done. The challenges faced by the naïve Bayes theorem were also dealt with in detail.

Phase-2 was purely for the capstone project implementation. The mentor gave a few topics for the capstone project and guided the mentees throughout the journey to get hands-on with Machine Learning. The topics of Phase-2 were Car Purchase Data, Flower Classification, Fruits Clustering, and predicting the house prices. One needs to complete and submit the GitHub link of at least a project on or before 25th August 2020. The capstone project is a mandatory step to be eligible for certifications. Also, the best projects with extra-ordinary innovation will be interviewed by the experts and will be eligible for internships.

