

2022

DESIGN CREDIT PROJECT REPORT

DELIVERING ON NEP THROUGH ED-TECH
INTERVENTION

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Introduction of the project :-

- There are several platforms available now for students that offer digital information, like Byju's, WhiteHat Jr., Coding Ninjas, and others. These platforms assist students in understanding a variety of courses through video lectures and also assist them in self-evaluation through examinations and practise problems.
- Given the general consensus, programming is booming right now, and practically everyone wants to learn how to write code, solve algorithms, and be the best at machine learning and artificial intelligence. However, many are unsure about how to learn, where to begin, and most crucially, where their interests lay.
- Although the aforementioned platforms offer lectures to learn things, they lack the ability to understand how the student's mind functions or what he or she is most adept at.

Methodology Applied:-

- It's an educational technology platform that shares features with others on the market, like Coding Ninjas, WhiteHat Jr., etc. It is necessary to perform a survey of parents and students in order to understand their opinions, feedback, shared interests, and future plans regarding academics (specifically, programming) in order to examine the facilities offered by these and improve these aspects. The poll can be used to design a productive platform that addresses the challenges children have when studying digitally on various platforms. Additionally, there are other elements like an aptitude exam to determine whether a student is interested in Data Structures and Algorithms, Machine Learning, or other related subjects, the judgement and analysis tests, and other features deciding the plan of action and providing the course work accordingly for efficient results will be worked upon.
- The questions on the aptitude exam are drawn from real-world issues that can be resolved utilising data structures, algorithms, machine learning, and other similar methods. The test will be created so that a student who has no prior experience with programming or related subjects can successfully complete it by applying logical reasoning abilities. After examining the responses, a verdict is reached that allows the student to determine how his or her thinking abilities can be put to use and which of the aforementioned courses he or she is best suited for. With regular practice in that area, the student can then excel in the future and build a successful career in that.
- After assessing the test, a plan of action is provided based on the results and suitable course material that includes video lectures, articles, blogs, papers, books etc., are also provided according to the level of the student. Additionally, ample examinations will be given on each topic so that after the designated amount of time has passed and the particular topic has been covered, the student can judge their level of skill in the subject.

- A website that serves as a conduit between our team and the students is made in order to accomplish all these goals. An assessment test is offered at the beginning in the form of a Google form, and students can log in and take it. Students can immediately begin their learning process utilising the offered lesson plan and course materials after the test results are released.

Work done so far and Results:-

- The work was divided into two subparts where one part of the team efficiently focused on the survey of our ed-tech idea among the various kids inside and outside IIT Jodhpur , this included 10 hours of calling and doing survey of various families and their mindset for their kids in relation to various coding and algorithmic aspects.
- The second activity included the sorting of the algorithmic mindset of various students into common ideas and mind frame works.
- References for the various kinds of questions that might be asked during the assessment have been found through research. Examples of these searches include looking for real-world issues or difficulties that can be resolved using data structures, real-world issues that can be resolved using machine learning, and similar searches.
- Both parents and students will receive a questionnaire for the survey. By eliminating flaws and adding new features that will aid in deciding how to assist the student, we may try to improve the current state of EdTech platforms that already exist with the aid of this survey.

CASE STUDIES CONDUCTED AND ANALYSED:-

- In order to define the main crux of the project we have conducted various case studies on people whom we accessed on the basis of various answers they gave to the questions we provided in the questionnaire hence after the SWOT analysis of the person we have provided him/her a career path which would be best suited in the domain of computer science.

POST ASSESSMENT MATERIAL DESIGN

CASE STUDY OF KABIR AHUJA

Kabir Ahuja

Ages: 11

Location: Delhi, Uttar Pradesh

Family: Parents, 1 brother.

Personality:



Bio.

Kabir is a 11 year old kid studying in 6th grade in St. John's school. He has a knack for mathematics and has an aptitude for problem solving. His thinking skills and logical aptitude is apt for both Data Structures and Algorithms. He is interested in programming but has no knowledge about it.

Preferred channels:



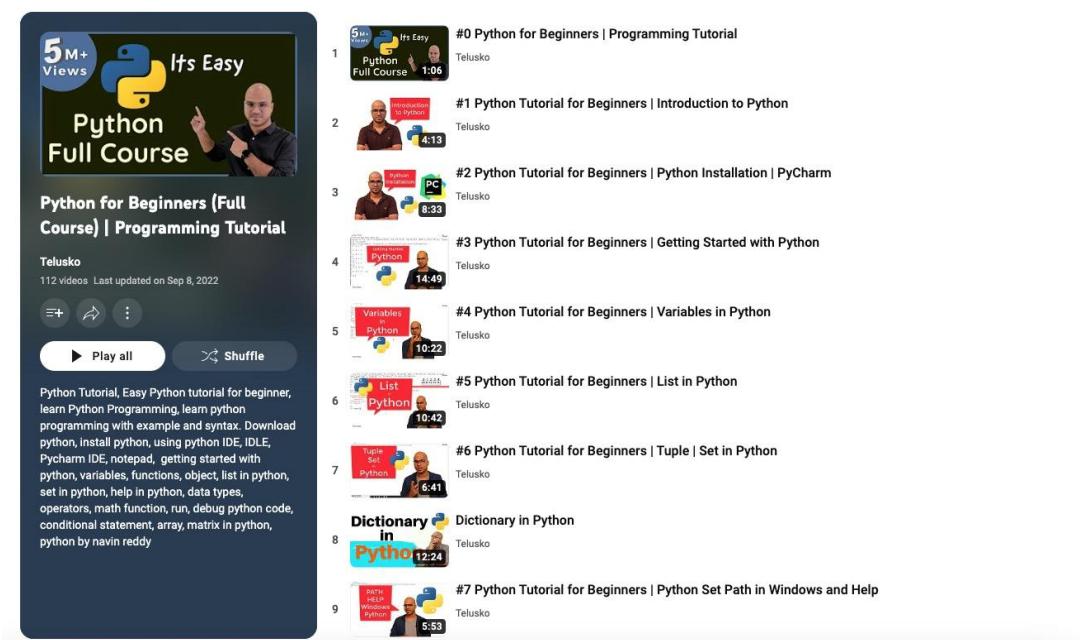
Goals:

- Find a platform that gives best guidance on where and how to learn programming language and Data Structures if we can spend 4 hrs per week.
- Proper guidance and course of action along with assessment/ practice tests for better understanding.

Roadmap

1. COMPETITIVE CODING/PROGRAMMING

- According the interests analysed for him we get to know that he is of a person who wants to explore the field of coding and later move on to the field which is more focused on algorithmic and competitive environment , hence we analysed that as he has strong logical aptitude skills and thinking skills hence he should first learn a quick learn programming language like python and then move to C++ and later DSA.
- His programming journey starts with a course on Introduction to Python Programming which is highly recommended to go through this video series in order to understand the basis of coding.(Estimated time of completion is 5 weeks)



<https://www.youtube.com/playlist?list=PLsyebzWxI7poL9JTVyndKe62ieoN-MZ3>



The other platform which is very useful is GeeksforGeeks which include a lot of blogs and articles on various topics on python programming language.

The screenshot shows the GeeksforGeeks website for Python Programming. On the left, there's a sidebar with a navigation menu under 'Introduction' and 'Input/Output'. The main content area has tabs 'Read' and 'Discuss'. A large banner at the top right says 'AD'. Below it, a large blue banner features the word 'PYTHON' in white, with 'PROGRAMMING LANGUAGE' written vertically on the left. To the right of 'PYTHON', there's a vertical column of tags: INPUT/OUTPUT, PANDAS, OOP, OPERATORS, BASICS, DATA TYPES, CONTROL FLOW, MACHINE LEARNING, EXCEPTIONS, and STRINGS. Below the banner, a text box states: 'This specially designed Python tutorial will help you learn Python Programming Language in most efficient way, with the topics from basics to advanced (like Web-scraping, Django, Deep-Learning, etc.) with examples.'

<https://www.geeksforgeeks.org/python-programming-language/>



Each day follows seeing 4-5 videos from the course link of youtube provided and then reading the same topics from geeks for geeks

The screenshot shows a list of four YouTube video thumbnails for a 'Python Tutorial for Beginners' series by Telusko. Each thumbnail includes a video duration and a small image of the instructor. The titles are: #9 Python Tutorial for Beginners | More on Variables in Python, #10 Python Tutorial for Beginners | Data Types in Python, #11 Python Tutorial for Beginners | Operators in Python, and #12 Python Tutorial for Beginners | Number System Conversion in Python.

Video Number	Title	Duration	Uploader
11	#9 Python Tutorial for Beginners More on Variables in Python	9:13	Telusko
12	#10 Python Tutorial for Beginners Data Types in Python	14:35	Telusko
13	#11 Python Tutorial for Beginners Operators in Python	11:07	Telusko
14	#12 Python Tutorial for Beginners Number System Conversion in Python	8:16	Telusko

Input/Output	▼
Operators	▼
Data Types	^
Python Set 3 (Strings, Lists, Tuples, Iterations)	
Python String	
Python Lists	
Python Tuples	
Python Sets	
Python Dictionary	
Python Arrays	

Problem Practice:- (Each day solving at least 15 problems)

<https://www.hackerrank.com/domains/python>

Prepare > Python

Python

- [Say "Hello, World!" With Python](#) Solve Challenge
Easy, Max Score: 5, Success Rate: 96.96%
- [Python If-Else](#) Solve Challenge
Easy, Python (Basic), Max Score: 10, Success Rate: 90.66%
- [Arithmetic Operators](#) Solve Challenge
Easy, Python (Basic), Max Score: 10, Success Rate: 97.84%
- [Python: Division](#) Solve Challenge
Easy, Python (Basic), Max Score: 10, Success Rate: 98.75%
- [Loops](#) Solve Challenge
Easy, Python (Basic), Max Score: 10, Success Rate: 98.39%
- [Write a function](#) Solve Challenge
Medium, Python (Basic), Max Score: 10, Success Rate: 90.58%
- [Print Function](#) Solve Challenge
Easy, Python (Basic), Max Score: 20, Success Rate: 97.15%
- [List Comprehensions](#) Solve Challenge
Easy, Python (Basic), Max Score: 10, Success Rate: 98.02%

STATUS

 Solved
 Unsolved

SKILLS

 Problem Solving (Basic)
 Python (Basic)
 Problem Solving (Advanced)
 Python (Intermediate)

DIFFICULTY

 Easy
 Medium
 Hard

SUBDOMAINS

 Introduction
 Basic Data Types
 Strings
 Sets
 Math
 Itertools
 Collections
 Date and Time
 Errors and Exceptions
 Classes
 Built-Ins
 Python Functionals
 Regex and Parsing
 XML

- The other course which he should do immediately after completion of python course is a short course on basics of C++, as all the algorithms of c++ he would have studied in the python course , as now we have only changed the programming language but the approach to problems remains the same

The course link provided below included two parts one which is learning how to write in c++ and at the same time solving problems related to it, the second part of the course corresponds to DATA STRUCTURES AND ALGORITHMS which is the main part of his journey in competitive programming

Unavailable videos are hidden

Index	Topic	Description
1	1. Introduction to C++ Data Structures and Algorithms College Placement Course Lecture 1	Apna College 26:03
2	VS Code Installation for C++ in Windows Step by step process explanation	Apna College 10:15
3	2.1 Data Types & Type Modifiers Data Structures & Algorithms Course in C++ Lecture 2.1	Apna College 11:09
4	2.2 Input/Output in C++ Data Structures and Algorithm Course in C++ Lecture 2.2	Apna College 8:42
5	2.3 If/else statement in C++ programming Data Structure and Algorithm Course Lecture 2.3	Apna College 7:51
6	2.4 Introduction to Loops in C++ programming Guaranteed Placement Course Lecture 2.4	Apna College 9:38
7	3.1 Break and Continue statement in C++ Programming Guaranteed Placement Course Lecture 3.1	Apna College 9:32
8	3.2 Switch-Case statement in C++ Programming Guaranteed Placement Course Lecture 3.2	Apna College 6:58

<https://www.youtube.com/playlist?list=PLfqMhTWNBTTe0b2nM6JHVCnAkhQRGiZMSJ>

Now he needs to create his profile on coding platforms like CodeChef and Codeforces and start practising various questions



← → 🔒 codechef.com/signup?destination=/START62D?order=desc&sortBy=successful_submissions

Microsoft Office H... My files - OneDrive Google Classroom Edpuzzle PDF Drive - Sear... ToffeeShare: Priva... CSL1010-2021/22... Paraphrasing Tool... NPTEL :: Basic co... Mindma

CODECHEF

SIGN UP LOGIN

Create Your CodeChef Account

Use Social Media Credentials

G O F

OR

CodeChef Username: *

Email: *

Show

CodeChef Password: *

Country: *

Username Example:
 john123 or john_123

- Should start with a lowercase letter from (a-z)
- Must be between 4 to 14 characters long
- Must end with a letter (a-z) or number (0-9)
- Must not contain a sequence of two or more underscores (_)
- Can contain lowercase letters from (a-z), digits or underscores
- Please do not keep an explicit or inappropriate name/username. It may lead to suspension of your account

https://www.codechef.com/START62D?order=desc&sortBy=successful_submissions

Have you solved a problem today? + Over 3500 questions to practice! Practice Now

Home » Compete » Starters 62 Division 4 (Rated)

DigitalOcean

Starters 62 26 Oct 2022 8:00 PM to 11:00 PM IST Contest Duration : 3 Hours

Rated till 6-stars

Join the CodeChef-DigitalOcean initiative to win free credits and a chance to win DO goodies

Scorable Problems for Division 4

Name	Code	Successful Submissions	Accuracy
Max minus Min	MAXDIFFMIN	15868	91.45
Test Score	CHEFSCO...	14396	83.21
X Jumps	XJUMP	13714	83.33
Make Multiple	MAKEMUL...	6871	29.94
Final Sum	FINALSUM	6866	50.99
Sorted Substrings	SSUBSTR	4462	63.79

Contest Ended

Have a look at our upcoming contests:

Contest	Date	Duration
START65	16th Nov 2022 08:00 pm IST	3 Hrs
START66	23rd Nov 2022 08:00 pm IST	3 Hrs

Want to try the problems of this contest or similar ones? Visit our [Practice Section](#)

Important links

[Contest Introduction](#) [Textual Problem Solutions](#)

Coders with Bronze Badge can now avail 20% off on CodeChef Pro

Discount is applicable for any Bronze & above Badge Daily Streak Contests or Problem Solver



A. Young Physicist

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

A guy named Vasya attends the final grade of a high school. One day Vasya decided to watch a match of his favorite hockey team. And, as the boy loves hockey very much, even more than physics, he forgot to do the homework. Specifically, he forgot to complete his physics tasks. Next day the teacher got very angry at Vasya and decided to teach him a lesson. He gave the lazy student a seemingly easy task: You are given an idle body in space and the forces that affect it. The body can be considered as a material point with coordinates $(0; 0; 0)$. Vasya had only to answer whether it is in equilibrium. "Piece of cake" — thought Vasya, we need only to check if the sum of all vectors is equal to 0. So, Vasya began to solve the problem. But later it turned out that there can be lots and lots of these forces, and Vasya can not cope without your help. Help him. Write a program that determines whether a body is idle or is moving by the given vectors of forces.

Input

The first line contains a positive integer n ($1 \leq n \leq 100$), then follow n lines containing three integers each: the x_i coordinate, the y_i coordinate and the z_i coordinate of the force vector, applied to the body ($-100 \leq x_i, y_i, z_i \leq 100$).

Output

Print the word "YES" if the body is in equilibrium, or the word "NO" if it is not.

Examples

input

```
3
4 1 7
-2 4 -1
1 -5 -3
```

[Copy]

output

```
NO
```

[Copy]

input

```
2
```

[Copy]

→ Attention

The package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, a solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then the value 800 ms will be displayed and used to determine the verdict.

Codeforces Beta Round #63 (Div. 2)

Finished

→ Virtual participation

Virtual contest is a way to take part in past contests, as well as to practice participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Problem tags



Codechef conducts contests on every Wednesday such as Starters in which he can participate and get to know the national rankings.

And with time, following the roadmap properly and practising questions with consistency, he will be able to generate interest in the coding and his coding skills will definitely improve and he would now be interested in learning applications of the coding he has done till now. and this is how we have managed a kid to generate his interest and learn a very important skill.

Evaluation Table for the course

STAGES	CONCEPTS	LEARNING OUTCOMES
I	Basic to Advanced in Python	Students should be able to solve the programming questions using python as a language , and also should have developed good command in OOP and numPy.
II	C++ Coursework	Students should be able to solve all the problems which are related to algorithmic mind framing while excluding the concepts of data structures . While he should also start doing CP on portals like Codechef and hackerrank. With an aim of completing 2 stars .
III	Data Structures	Students should be able to solve all the questions which involve the use of some data structures like arrays, trees, graphs etc. in order to learn wider concepts and apply them in CP.
IV	Competitive Programming	Now the time comes when the student has completed all the work and now needs to start competitive programming which not only improves the skills of student but also increases the algorithmic thinking while at the same time CP also helps the student in coding rounds for the companies when he/she later sits for the campus interns and placements.

WEB DEVELOPMENT

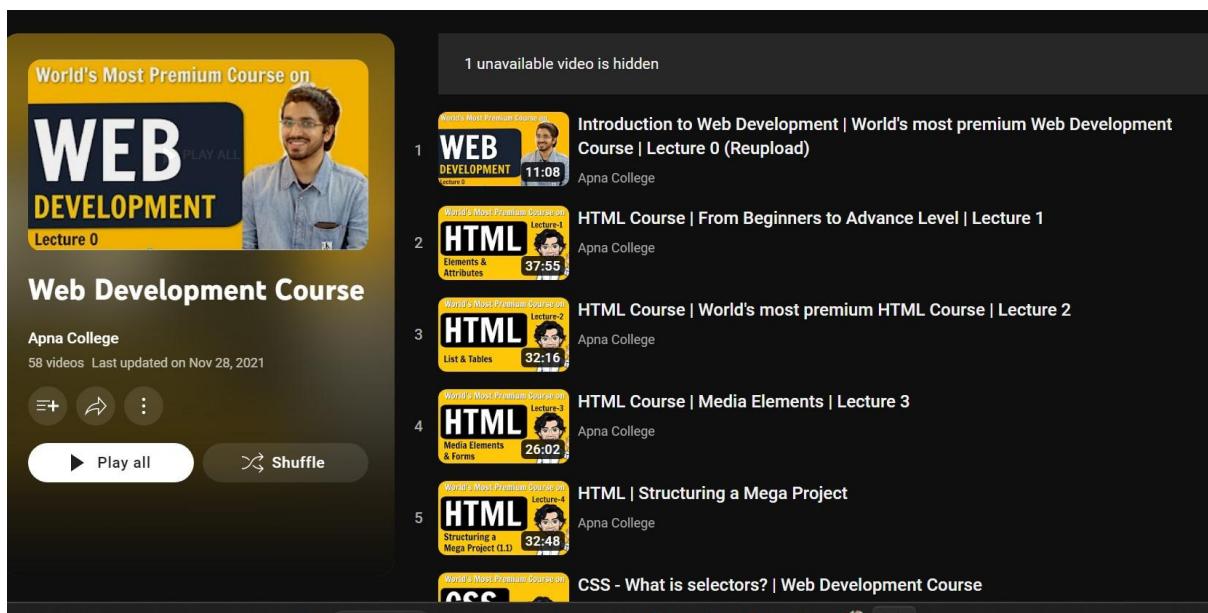
- We learned from his interests that he is also a person who can explore the field of web development and website designing including front end and both end since it is also similar to programming and solving problems rather it involves a creative side of an individual and is more focused on algorithmic and competitive environments. Thus, we determined that because he has strong logical aptitude skills and thinking skills, he can also start with learning web development which also has huge career opportunities and will benefit Kabir in the long term.

A full-stack web developer looks after both the front-end and the back-end parts. The front-end deals with how the websites look when delivered to the customers, while the back-end stores and processes all the data safely. Also, web developers are highly paid professionals, so it would not be bad for Kabir to start learning web development.

We will be discussing the roadmap for learning web development further here :

https://www.youtube.com/playlist?list=PLfqMhTWNBTe3H6c9OGXb5_6wcc1Mca52n

- This course provided above is a really premium course which is freely available over youtube so that student can easily access it and gain good knowledge, the course contents screenshot is provided below.





https://www.youtube.com/playlist?list=PLu0W_9lI9agiCUZYRsvtGTXdxkzPyltg

- Apart from HTML/CSS , one important thing to learn in web development is javascript , whose course contents is provided below.

The image shows a grid of six YouTube video thumbnails for a JavaScript course. Each thumbnail includes the title, a small profile picture of a person with dark hair, the duration of the video, and the source 'Apna College'. The titles are:

- Loops in Javascript | Web Development Course | Javascript- Lecture 11
- Basics of Functions in Javascript | Web Development Course | Javascript - Lecture 12
- Strings in Javascript | Web Development Course | Lecture 13 & 14
- Reference Datatypes in JavaScript | Web Development Course | Javascript Lecture 17
- Javascript : Top 10 Websites to practice | Web Development Course | Lecture 18
- Coercion and Type Conversion | Javascript - Lecture 19 | Web Development Course

Each thumbnail also includes a small purple box with text like 'Understanding Loops', 'Basics of Function', 'Strings', 'Reference Datatypes', 'Top 10 Websites to practice JS', and 'Coercion and Conversion' respectively, along with the lecture number.

- Below provided course is a 5 week course which is an intermediate level course on HTML/CSS and Javascript being certified from a top university named John Hopkins University , hence this course can be considered to be more structured and planned than the previous one.



HTML, CSS, and Javascript
for Web Developers
Johns Hopkins University

Course Material

Week 1

Week 2

Week 3

Week 4

Week 5

Grades

other elements and which...

Show more

Welcome to HTML, CSS, and Javascript for Web Developers!

Course Introduction
Video • 3 min

How Grading and Being Late on Assignments Works
Reading • 10 min

Recommended Books
Reading • 10 min

CHECK OUT MY SITE!
Reading • 10 min

ALL of the EXAMPLE SOURCE CODE for this Course
Reading • 3 min

Frequently Asked Questions (FAQ)
Reading • 1 min

- Students can also set weekly goals and targets for his/her personal benefits in order to keep a track of the progress in lectures and quizzes.

My Weekly Goal

Nov 28 - Dec 4 | Learn 5 days a week

0/5

days



Edit



<https://getbootstrap.com/>

- Below displayed screenshots are of bootstrap , which is something used by any web developer in order to develop a website to have better functionalities along with better styling. Bootstrap consists of small snippets of codes which can be directly copied to our code in order to implement it in our live server.

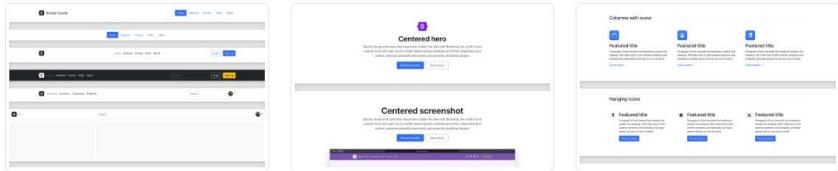
New in v5.2 CSS variables, responsive offcanvas, new utilities, and more!

Build fast, responsive sites with Bootstrap

Powerful, extensible, and feature-packed frontend toolkit. Build and customize with Sass, utilize prebuilt grid system and components, and bring projects to life with powerful JavaScript plugins.

Snippets

Common patterns for building sites and apps that build on existing components and utilities with custom CSS and more.



Headers

Display your branding, navigation, search, and more with these header components



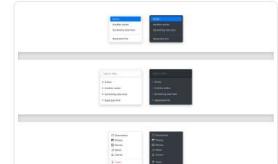
Heroes

Set the stage on your homepage with heroes that feature clear calls to action.



Features

Explain the features, benefits, or other details in your marketing content.



Sidebars

Common navigation patterns ideal for offcanvas or multi-column layouts.



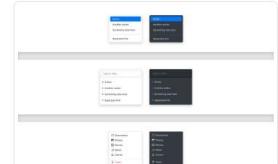
Footers

Finish every page strong with an awesome footer, big or small.



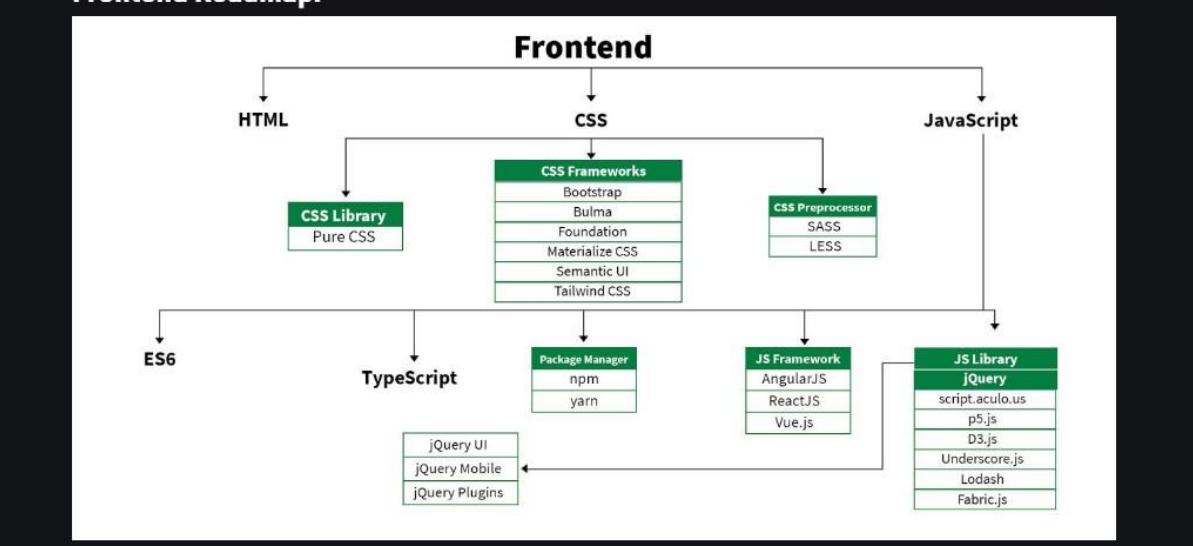
Dropdowns

Enhance your dropdowns with filters, icons, custom styles, and more.

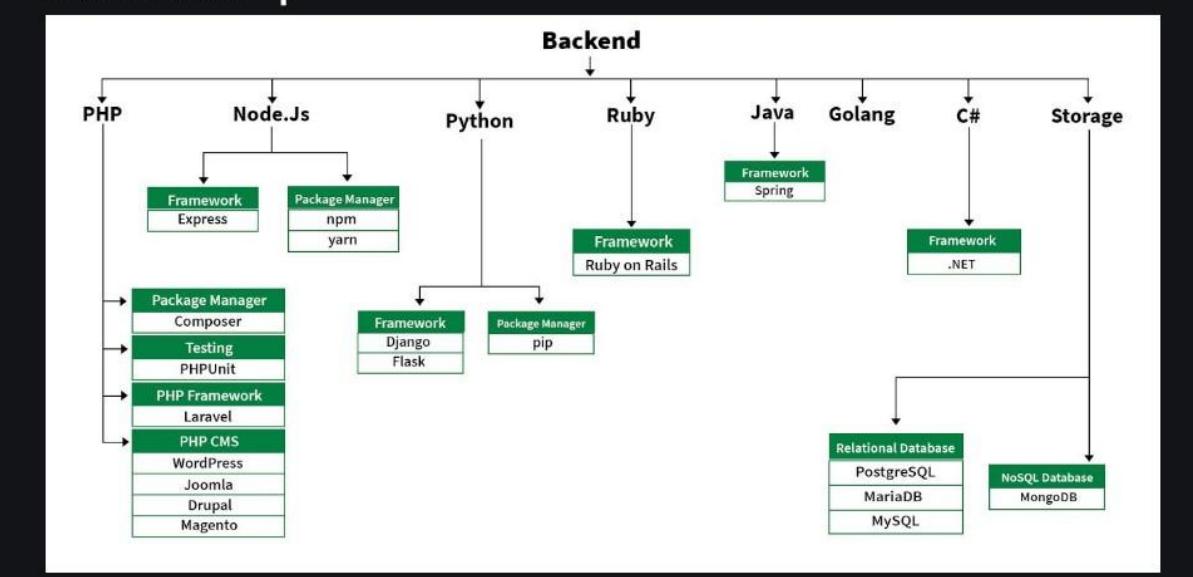


The graphical representation of frontend and backend roadmap is displayed below

- Frontend Roadmap:



- Backend Roadmap:



Evaluation Table for the course

STAGES	CONCEPTS	LEARNING OUTCOMES
I(2 weeks)	HTML	After the completion of the basic course of HTML, students will be able to easily design a webpage on the live server , with various HTML formatting rules.

II(2 weeks)	CSS	Then CSS comes into play when , by the end of the timeline, a CSS student will be able to easily design or do formatting of the page by using various style sheets available and their tools to develop a dynamic webpage with various options.
III(1-2 week)	Project work	The student is now having knowledge of HTML/CSS that he/she can design a fully functionable front end having all the features of the concepts learned TASK:- Design a front end replica of Google Homepage with the links on the web page be fully functionable and being able to redirect.
IV(3 weeks)	Back End	After completion of the front end, students should start learning JAVASCRIPT and Python Django for the backend development knowledge .
V(2 week)	Project:- Fully Responsive Website	The student after almost 6-8 weeks of study now has a good knowledge of website development hence should now work on a project of development of a fully responsive website. TASK :- Design a project in which you build a fully responsive portfolio website.

CASE STUDY OF NAVYA KAPOOR

Navya Kapoor

Age: 15

Family: Parents

Location: Agra, Uttar Pradesh.

Personality:

Introvert

Extrovert

Analytical

Creative

Passive

Active

Bio:

Navya is a 15 year old girl, studying in 10th grade in Nalanda girls school.

She has a knack for programming and has learnt the language python. Her thinking skills are suitable for Machine learning but she has no idea on where and how to make a start in this field.

Preferred channels:

Chrome

Mobile

Email

Goals:

- Find a platform that can give proper guidance on how to revise already learnt basics and start with Machine Learning simultaneously if she can spend 6 hrs per week.
- A platform that provides ample practice questions/ assignments

Roadmap

- As she has aspired to explore the domain of Machine Learning as she is well to go with python.

- Hence before starting ML one needs to have the knowledge of how to use Python for Data Science by learning various Libraries like pandas, numpy and matplotlib.

<https://www.udemy.com/course/python-for-data-science-and-machine-learning-bootcamp/>



The screenshot shows the Udemy course page for "Python for Data Science and Machine Learning Bootcamp". The page has a dark header with the Udemy logo, categories, and a search bar. Below the header, the course title is displayed in large white text. A brief description follows, mentioning various libraries and frameworks. Key statistics are shown in a box: "Bestseller" with a 4.6 rating from 122,829 ratings, and 590,243 students. The course was created by Jose Portilla and last updated on 05/2020. It is available in English and other languages. A section titled "What you'll learn" lists various skills with checkmarks, such as using Python for Data Science and Machine Learning, implementing Machine Learning Algorithms, and using Pandas, Seaborn, Matplotlib, Plotly, SciKit-Learn, TensorFlow, and Spark. A "Show more" link is at the bottom of this list.

Development > Data Science > Machine Learning

Python for Data Science and Machine Learning Bootcamp

Learn how to use NumPy, Pandas, Seaborn , Matplotlib , Plotly , Scikit-Learn , Machine Learning, Tensorflow , and more!

Bestseller 4.6 ★★★★★ (122,829 ratings) 590,243 students

Created by [Jose Portilla](#)

Last updated 05/2020 English English, Arabic [Auto], [13 more](#)

What you'll learn

- ✓ Use Python for Data Science and Machine Learning
- ✓ Implement Machine Learning Algorithms
- ✓ Learn to use Pandas for Data Analysis
- ✓ Learn to use Seaborn for statistical plots
- ✓ Use SciKit-Learn for Machine Learning Tasks
- ✓ Logistic Regression
- ✓ Random Forest and Decision Trees
- ✓ Use Spark for Big Data Analysis
- ✓ Learn to use NumPy for Numerical Data
- ✓ Learn to use Matplotlib for Python Plotting
- ✓ Use Plotly for interactive dynamic visualizations
- ✓ K-Means Clustering
- ✓ Linear Regression
- ✓ Natural Language Processing and Spam

Show more ▾

This course includes:



25 hours of video



18 articles + resources



Certificate of completion

Top companies offer this course to their employees

This course was selected for our collection of top-rated courses trusted by businesses worldwide. [Learn more](#)



Course content

27 sections • 165 lectures • 24h 54m total length

[Expand all sections](#)

Course Introduction

3 lectures • 7min

Introduction to the Course

[Preview](#) 03:33

Course Help and Welcome

[Preview](#) 00:36

Course FAQs

03:02

Environment Set-Up

1 lecture • 11min

A course of Machine learning Foundations: A case study approach by the University of Washington.

<https://in.coursera.org/learn/ml-foundations>

Browse > Data Science > Machine Learning

This course is part of the Machine Learning Specialization

Machine Learning Foundations: A Case Study Approach

★★★★★ 4.6 13,180 ratings | ⌘ 93%

 Emily Fox +1 more instructor

Enroll for Free Starts Nov 16 Financial aid available

365,996 already enrolled

Offered By **W UNIVERSITY of WASHINGTON**

About this Course

102,606 recent views

Do you have data and wonder what it can tell you? Do you need a deeper understanding of the core ways in which machine learning can improve your business? Do you want to be able to converse with specialists about anything from regression and classification to deep learning and recommender systems?

In this course, you will get hands-on experience with machine learning from a series of practical case-studies. At the end of the first course you will have studied how to predict house prices based on house-level features, analyze sentiment from user reviews, retrieve documents of interest, recommend products, and search for images. Through hands-on practice with these use cases, you will be able to apply machine learning methods in a wide range of domains.

This first course treats the machine learning method as a black box. Using this abstraction, you will focus on understanding tasks of interest, matching these tasks to machine learning tools, and assessing the quality of the output. In subsequent courses, you will delve into the components of this black box by examining models and algorithms. Together, these pieces form the machine learning pipeline, which you will use in developing intelligent applications.

Learning Outcomes: By the end of this course, you will be able to:

- Identify potential applications of machine learning in practice.
- Describe the core differences in analyses enabled by regression, classification, and clustering.
- Select the appropriate machine learning task for a potential application.
- Apply regression, classification, clustering, retrieval, recommender systems, and deep learning.
- Represent your data as features to serve as input to machine learning models.
- Assess the model quality in terms of relevant error metrics for each task.
- Utilize a dataset to fit a model to analyze new data.
- Build an end-to-end application that uses machine learning at its core.
- Implement these techniques in Python.

This course covers the basics of machine learning and python programming and helps students understand better. It is a 6-week long course and consists of 18 hr worth material.

It can be taken as a free audit course from coursera.

It consists of

- Introduction to Machine learning
- Regression
- Classification
- Clustering and similarity
- Recommending products
- Deep learning

Week Wise Plan

Syllabus - What you will learn from this course

Content Rating  93% (55,159 ratings) 

WEEK

1

 3 hours to complete

Welcome

Machine learning is everywhere, but is often operating behind the scenes. <p>This introduction to the specialization provides you with insights into the power of machine learning, and the multitude of intelligent applications you personally will be able to develop and deploy upon completion.</p>We also discuss who we are, how we got here, and our view of the future of intelligent applications.

 18 videos (Total 84 min), 8 readings, 1 quiz [See All](#)

WEEK

2

 3 hours to complete

Regression: Predicting House Prices

This week you will build your first intelligent application that makes predictions from data.<p>We will explore this idea within the context of our first case study, predicting house prices, where you will create models that predict a continuous value (price) from input features (square footage, number of bedrooms and bathrooms...).</p>This is just one of the many places where regression can be applied. Other applications range from predicting health outcomes in medicine, stock prices in finance, and engine usage in high performance

[SHOW ALL](#)

 19 videos (Total 82 min), 3 readings, 2 quizzes [See All](#)

WEEK

3

 3 hours to complete

Classification: Analyzing Sentiment

How do you guess whether a person felt positively or negatively about an experience, just from a short review they wrote?<p>In our second case study, analyzing sentiment, you will create models that predict a class (positive/negative sentiment) from input features (text of the reviews, user profile information...).</p>This task is an example of classification, one of the most fundamental areas of machine learning with a broad range of applications, including spam detection, medical diagnosis, and recommendation systems.

[SHOW ALL](#)

 19 videos (Total 75 min), 3 readings, 2 quizzes [See All](#)

WEEK

4

 3 hours to complete

Clustering and Similarity: Retrieving Documents

A reader is interested in a specific news article and you want to find a similar articles to recommend. What is the right notion of similarity? How do I automatically search over documents to find the one that is most similar? How do I quantitatively represent the documents in the first place?<p>In this third case study, retrieving documents, you will examine various document representations and an algorithm to retrieve the most similar subset. You will also consider structured representations of the documents that automatically group articles by similarity (e.g., document topic).</p>You will actually build an intelligent document retrieval system for Wikipedia entries in an Jupyter notebook.

 17 videos (Total 76 min), 3 readings, 2 quizzes [See All](#)

WEEK

5

 3 hours to complete

Recommending Products

Ever wonder how Amazon forms its personalized product recommendations? How Netflix suggests movies to watch? How Pandora selects the next song to stream? How Facebook or LinkedIn finds people you might connect with? Underlying all of these technologies for personalized content is something called collaborative filtering.<p>You will learn how to build such a recommender system using a variety of techniques, and explore their tradeoffs.</p>One method we examine is matrix factorization, which learns features of users and products to form recommendations. In a Jupyter notebook, you will use these techniques to build a real song recommender system.

 19 videos (Total 94 min), 3 readings, 2 quizzes [See All](#)

WEEK

6

 3 hours to complete

Deep Learning: Searching for Images

You've probably heard that Deep Learning is making news across the world as one of the most promising techniques in machine learning. Every industry is dedicating resources to unlock the deep learning potential, including for tasks such as image tagging, object recognition, speech recognition, and text analysis.<p>In our final case study, searching for images, you will learn how neural networks provide more descriptive linear features that provide impressive performance in image classification and retrieval tasks.

[SHOW ALL](#)

 18 videos (Total 74 min), 4 readings, 2 quizzes [See All](#)

 1 hour to complete

Closing Remarks

In the conclusion of the course, we will describe the final stage in turning our machine learning tools into a service: deployment.<p>We will also discuss some open challenges that the field of machine learning still faces, and where we think machine learning is heading. We conclude with an overview of what's in store for you in the rest of the specialization, and the amazing intelligent applications that are ahead for us as we evolve machine learning.

 7 videos (Total 33 min), 1 reading [See All](#)

By the end of this course, the student will be able to:

- Select the appropriate machine learning task for a potential application and identify potential applications of machine learning in practice.
- Describe the core differences in analyses enabled by regression, classification, and clustering.
- Apply regression, classification, clustering, retrieval, recommender systems, and deep learning.
- Represent your data as features to serve as input to machine learning models.
- Assess the model quality in terms of relevant error metrics for each task.
- Utilize a dataset to fit a model to analyze new data.
- Build an end-to-end application that uses machine learning at its core.
- Implement these techniques in Python.

Assignments and exercises can be provided every week for more effective learning.

Some basic projects can be given at the end of the course like:

Transform images into its cartoon. The objective of this machine learning project is to CARTOONIFY the images.

The source code for this project is:

<https://data-flair.training/blogs/cartoonify-image-opencv-python/>

Cartoonify an Image with OpenCV in Python

Free Machine Learning course with 50+ real-time projects [Start Now!!](#)

Do you miss your childhood? Yes, everyone does.! So today let's head towards giving our pictures some cartoonic effects. This article is all about building a photo cartoonifier using Python and OpenCV

What is OpenCV?

Python is the pool of libraries. It has numerous libraries for real-world applications. One such library is OpenCV. OpenCV is a cross-platform library used for Computer Vision. It includes applications like video and image capturing and processing. It is majorly used in image transformation, object detection, face recognition, and many other stunning applications.

What are we going to build?

At the end of this article, we aim to transform images into its cartoon. Yes, we will CARTOONIFY the images. Thus, we will build a python application that will transform an image into its cartoon using OpenCV.

We aim to build an application which looks like:

Emojify: The objective of this machine learning project is to classify human facial expressions and map them to emojis.

The source code for this project is:

<https://data-flair.training/blogs/create-emoji-with-deep-learning/>

Emojify – Create your own emoji with Deep Learning

Free Machine Learning course with 50+ real-time projects [Start Now!!](#)

Deep Learning project for beginners – Taking you closer to your Data Science dream

Emojis or avatars are ways to indicate nonverbal cues. These cues have become an essential part of online chatting, product review, brand emotion, and many more. It also lead to increasing data science research dedicated to emoji-driven storytelling.

With advancements in computer vision and deep learning, it is now possible to detect human emotions from images. In this deep learning project, we will classify human facial expressions to filter and map corresponding emojis or avatars.

About the Dataset

The FER2013 dataset (facial expression recognition) consists of 48*48 pixel grayscale face images. The images are centered and occupy an equal amount of space. This dataset consist of facial emotions of following categories:

- 0:angry
- 1:disgust
- 2:feat
- 3:happy
- 4:sad
- 5:surprise
- 6:natural



MNIST Digit Classification Machine Learning Project

The source code for this project is:

<https://data-flair.training/blogs/python-deep-learning-project-handwritten-digit-recognition/>

Deep Learning Project – Handwritten Digit Recognition using Python

Free Machine Learning course with 50+ real-time projects [Start Now!!](#)

Python Deep Learning Project

To make machines more intelligent, the developers are diving into machine learning and deep learning techniques. A human learns to perform a task by practicing and repeating it again and again so that it memorizes how to perform the tasks. Then the neurons in his brain automatically trigger and they can quickly perform the task they have learned. Deep learning is also very similar to this. It uses different types of neural network architectures for different types of problems. **For example** – object recognition, image and sound classification, object detection, image segmentation, etc.

This is the 11th project in the DataFlair's series of 20 Python projects. I suggest you to bookmark the previous projects:

1. [Fake News Detection Python Project](#)
2. [Parkinson's Disease Detection Python Project](#)
3. [Color Detection Python Project](#)
4. [Speech Emotion Recognition Python Project](#)
5. [Breast Cancer Classification Python Project](#)
6. [Age and Gender Detection Python Project](#)
7. Handwritten Digit Recognition Python Project
8. [Chatbot Python Project](#)
9. [Driver Drowsiness Detection Python Project](#)
10. [Traffic Signs Recognition Python Project](#)
11. [Image Caption Generator Python Project](#)

The dataset is:

https://drive.google.com/file/d/1hJiOlxctFH3uL2yTqXU_1f6c0zLr8V_K/view

w

Similarly other projects can be found on

<https://data-flair.training/blogs/machine-learning-project-ideas/>

Top 47 Machine Learning Projects for 2022 [Source Code Included]

Free Machine Learning course with 50+ real-time projects [Start Now!!](#)

Machine Learning Projects – Learn how machines learn with real-time projects

It is always good to have a practical insight into any technology that you are working on.

Though textbooks and other study materials will provide you all the knowledge that you need to know about any technology but you can't really master that technology until and unless you work on real-time projects.

In this tutorial, you will find 21 machine learning project ideas for beginners, intermediates, and experts to gain real-world experience of this growing technology in 2022.

These machine learning project ideas will help you in learning all the practicalities that you need to succeed in your career and to make you employable in the industry.

These machine learning projects can be developed in Python, R or any other tool.

Evaluation Table for the course

STAGES	CONCEPTS	LEARNING OUTCOMES
I(1 week)	Machine Learning Basics	The student will enter the world of data science and machine learning with learning python libraries such as numPy, Pandas and pyPlot which will help in data visualisation
II(2 weeks)	Regression and Classification	By the end of the second stage students will be able to gain knowledge in the field of regression and classification , he/she will

		also be able to make a first intelligent application that makes predictions from the study of a data set.
III(1-2 week)	Clustering and Recommending products	Students will be able to create a class that predicts the data set from the input given and create an algorithm to design a subset .
IV(3 weeks)	Deep Learning and Neural Networks	Deep learning will help student to focus on a more broader aspect of machine learning using neural networking , while the student will focus on Image Tagging
V(4 weeks)	Working on Project	Now students should use various helping tools available all over the internet inorder to work on a project of Heart stroke rate predictor , this project will help them use the concepts learnt by them in whole ML to apply.
VI(As much student wishes for)	Kaggle Competitions	Apart from the course structure, students should also practice the concepts of ML by giving competitions or contests on Kaggle in order to implement the concepts learned.

CASE STUDY ON ABIR CHATTERJEE

Abir Chatterjee

Age: 17

Location: Kolkata, West Bengal

Family: Parents, 1 Sister.

Personality:

Introvert

Extrovert

Mathematics

Biology

Active

Passive

Analytical

Creative

Goals:

- Looking for a site that can provide knowledge on deep learning.
- A site that provides projects on deep learning from basics to advanced.

Bio:

Abir is a 17 year old kid.

He is about to enter into the Engineering stream. He is well versed with Python programming and data structures. Based on

He also is proficient in Machine Learning. Based on his test results show that he is more apt for Machine learning and deep learning.

Preferred channels:

Chrome:

Mobile:

Email:

Roadmap:-

- As he is focused in the field of Deep learning , then can begin with a course on coursera

Course on Deep learning specialization:

https://www.coursera.org/specializations/deep-learning?irclickid=X4h31U1zcxyNTC4xfs2CWyM-UkDS1s26AR%3Akzl0&irgwc=1&utm_medium=partners&utm_source=im pact&utm_campaign=3294490&utm_content=b2c

The screenshot shows the Coursera website with the Deep Learning Specialization course page. At the top, there's a navigation bar with links for 'Explore', 'What do you want to learn?', 'Online Degrees', 'Find your New Career', 'For Enterprise', 'For Universities', 'Log In', and 'Join for Free'. Below the navigation is a search bar. The main content area features the course title 'Deep Learning Specialization' offered by 'DeepLearning.AI'. It includes a star rating of 4.9 from 127,335 ratings, a photo of Andrew Ng, and a red button to 'Enroll for Free' starting Nov 16. It also mentions 'Financial aid available' and shows 720,717 already enrolled. Below this, a section titled 'WHAT YOU WILL LEARN' lists four bullet points with checkmarks: 1) Build and train deep neural networks, identify key architecture parameters, implement vectorized neural networks and deep learning to applications; 2) Train test sets, analyze variance for DL applications, use standard techniques and optimization algorithms, and build neural networks in TensorFlow; 3) Build a CNN and apply it to detection and recognition tasks, use neural style transfer to generate art, and apply algorithms to image and video data; 4) Build and train RNNs, work with NLP and Word Embeddings, and use HuggingFace tokenizers and transformer models to perform NER and Question Answering. At the bottom, a section titled 'SKILLS YOU WILL GAIN' lists various skills represented as buttons: Artificial Neural Network, Convolutional Neural Network, Tensorflow, Recurrent Neural Network, Transformers, Deep Learning, Backpropagation, Python Programming, Neural Network Architecture, Mathematical Optimization, hyperparameter tuning, and Inductive Transfer.

[About this Specialization](#)

- The Deep Learning Specialization is an introductory course that will teach you about the potential, difficulties, and effects of deep learning.
- With the use of techniques like Dropout, BatchNorm, Xavier/He initialization, and others, the student will be able to construct and train neural network designs like Convolutional Neural Networks, Recurrent Neural Networks, LSTMs, and Transformers.
- Using Python and TensorFlow, the student will learn theoretical ideas and their commercial applications while tackling practical problems in speech recognition, music synthesis, chatbots, machine translation, natural language processing, and other areas.

- This Deep Learning Specialization offers fundamental information for AI.

- By the end of this course the student will be able to:
 - Build and train deep neural networks, implement vectorized neural networks, identify architecture parameters, and apply DL to your applications
 - Use best practices to train and develop test sets and analyze bias/variance for building DL applications, use standard NN techniques, apply optimization algorithms, and implement a neural network in TensorFlow
 - Use strategies for reducing errors in ML systems, understand complex ML settings, and apply end-to-end, transfer, and multi-task learning
 - Build a Convolutional Neural Network, apply it to visual detection and recognition tasks, use neural style transfer to generate art, and apply these algorithms to image, video, and other 2D/3D data
 - Build and train Recurrent Neural Networks and its variants (GRUs, LSTMs), apply RNNs to character-level language modeling, work with NLP and Word Embeddings, and use Hugging Face tokenizers and transformers to perform Named Entity Recognition and Question Answering.

- In order to learn further he needs to learn from various already built projects by various students.
<https://www.interviewbit.com/blog/deep-learning-projects/>

PROJECTS · ① 13 minute read

Top 20 Deep Learning Projects With Source Code

May 25, 2022

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- Additional Resources

- The thing about ML/DL is that it starts to get boring if you don't practice for it

The screenshot shows the Kaggle Competitions page. On the left, there's a sidebar with links like 'Create', 'Home', 'Competitions' (which is selected), 'Datasets', 'Code', 'Discussions', 'Learn', and 'More'. The main content area has a search bar 'Search competitions' and several filter options: 'All Competitions' (Everything, past & present), 'Featured' (Premier challenges with prizes), 'Getting Started' (Approachable ML fundamentals), 'Research' (Scientific and scholarly challenges), 'Community' (Created by fellow Kagglers), and 'Playground' (Fun practice problems). Below these are sections for 'Get Started' and 'New to Kaggle?'. There are three cards for 'New to Kaggle': 'Titanic - Machine Learning from Disaster', 'House Prices - Advanced Regression Techniques', and 'Spaceship Titanic'. Each card includes a thumbnail, title, description, and stats like '14469 Teams' or '2285 Teams'. A 'See all' link is at the bottom right.

- The various aspects which also included DL can club with the field of Artificial Intelligence , the course link is provided below (Estimated time of completion Is given in course)

https://www.coursera.org/learn/ai-for-everyone?irclickid=X4h31U1zcxyNTC4xfs2CWyM-UkDS142KAR%3Akzl0&irgwc=1&utm_medium=partners&utm_source=impact&utm_campaign=3294490&utm_content=b2c

The screenshot shows the Coursera 'AI For Everyone' course page. At the top, there's a search bar 'What do you want to learn?' and navigation links for 'Online Degrees', 'Find your New Career', 'For Enterprise', 'For Universities', 'Log In', and 'Join for Free'. The course title 'AI For Everyone' is prominently displayed with a 4.8 rating and 37,240 ratings. It's offered by 'DeepLearning.AI'. The course starts on Nov 16 and is currently free. A large red button says 'Enroll for Free'. Below it, it says 'Financial aid available' and shows '833,235 already enrolled'. At the bottom, there are links for 'About', 'Instructors', 'Syllabus', 'Reviews', 'Enrollment Options', and 'FAQ'.

- In this course, the student will learn

- The meaning behind common AI terminology, including neural networks, machine learning, deep learning, and data science
- What AI realistically can and cannot do
- How to spot opportunities to apply AI to problems in your own organization
- What it feels like to build machine learning and data science projects
- How to work with an AI team and build an AI strategy in your company
- How to navigate ethical and societal discussions surrounding AI

Syllabus - What you will learn from this course

Content Rating  98% (60,263 ratings) ⓘ

WEEK

1



3 hours to complete

What is AI?



9 videos (Total 69 min) [See All](#)

WEEK

2



2 hours to complete

Building AI Projects



8 videos (Total 52 min) [See All](#)

WEEK

3



3 hours to complete

Building AI In Your Company



10 videos (Total 90 min) [See All](#)

WEEK

4



2 hours to complete

AI and Society



8 videos (Total 50 min), 1 reading, 2 quizzes [See All](#)

- Other courses which can be taken in to consideration as a backup courses are:-

https://www.coursera.org/learn/introduction-to-ai?irclickid=X4h31U1zcxyNTC4xfs2CWyM-UkDS19wTAR%3Akzl0&irgwc=1&utm_medium=partners&utm_source=impact&utm_campaign=3294490&utm_content=b2c

About this Course

275,406 recent views

In this course you will learn what Artificial Intelligence (AI) is, explore use cases and applications of AI, understand AI concepts and terms like machine learning, deep learning and neural networks. You will be exposed to various issues and concerns surrounding AI such as ethics and bias, & jobs, and get advice from experts about learning and starting a career in AI. You will also demonstrate AI in action with a mini project.

This course does not require any programming or computer science expertise and is designed to introduce the basics of AI to anyone whether you have a technical background or not.

Evaluation Table for the course

STAGES	CONCEPTS	LEARNING OUTCOMES
I(1 week)	Machine Learning Basics	The student will enter the world of data science and machine learning with learning python libraries such as numPy, Pandas and pyPlot which will help in data visualisation
II(2 weeks)	Regression and Classification	By the end of the second stage students will be able to gain knowledge in the field of regression and classification , he/she will also be able to make a first intelligent application that makes

		predictions from the study of a data set.
III(1-2 week)	Clustering and Recommending products	Students will be able to create a class that predicts the data set from the input given and create an algorithm to design a subset.
IV(3 weeks)	Deep Learning and Neural Networks	Deep learning will help student to focus on a more broader aspect of machine learning using neural networking , while the student will focus on Image Tagging
V(4 weeks)	Artificial Intelligence	Now the course direction changes up a bit in order to enter the field of artificial intelligence and building basic AI projects like basic Alexa system
VI	Kaggle competitions	Students should also focus on various contests and competitions being organised on kaggle and participate in it in order to gain more knowledge of the concepts.

Conclusion:-

- This project was started with the inspiration and motivation of national education policy which was implemented by the Ministry of Education and our topic of study which was delivered on NEP through Ed-Tech Intervention coincided with it.
- The project completion was divided into various stages of work:-

STAGE 1:-

The stage 1 of the Project included the creating the assessment portal through the creation of questionnaire which involved developing the ideas through solving the questions , actually the questions which were framed to be evaluated did not particularly pointed out to some coding or algorithm based questions but were questions of logical thinking and algorithmic approach based questions such as a person when tries to solve and gives us the right answer then we get to know that what all thought procedure he would have went through in solving the question hence we can deduce what his/her pathway that they can choose further in life like Competitive programming , Machine Learning, Deep Learning, Computer Vision etc.

STAGE 2:-

The stage 2 of the project which was focused on doing case studies which has helped us to focus on experiencing thought process of wide variety of students of small age group on which we presented case studies report in our final report above and showcased the strengths , weakness of each students and also which included the data fetched from him/her when extracted in the 10 hours of calling in total also we added the fields of computer science which he/she can opt for in future in the basis of assessment we did.

This stage also included the creation of a roadmap of how to proceed further .

STAGE 3:-

This stage included the creation of roadmap for the various case studies conducted by us , this focused on almost 5-6 hours of research and roadmap creating for each person , by doing research of various courses available over the internet at the same time reading and suggesting various blogs and reading courses which can be utilised by the student in order to develop the concepts , complete the suggested course in time frame allotted and at the same time practising questions .

Hence now we can conclude this project with this final report and we look forward to more advancements in this initiative by other young minds which will help students new to the NEP understand their capabilities and improve their skill set which will be highly beneficial for them in the future.

Feedback System

- We have realised that through the roadmap provided along with the coursework given , students will be able to realize their potential and also explore new fields of computer science.
- But it also becomes our duty to improve on the system we have provided along with the inputs from the precious minds using this course curriculum.
- A form has been designed for the students and they are strongly advised to fill this form hence as we can improve upon the course curriculum and update the roadmap with the needs of students , also the students who want to explore the field to more depth should surely fill the form.

https://docs.google.com/forms/d/e/1FAIpQLSdp4UU83R0juAhdLhDwQG a9hUNjUGzxCyLY3G7odxcNmyCeLA/viewform?usp=sf_link

THANK YOU !