45 DAYS/ONE MONTH INTERNSHIP PROGRAM POWERED BY
UGCPL

AI & DATA SCIENCE

Important information related to 45/30 Days Internship Program

- On registration confirmation, a common whatsapp group will be formed, where the students will be getting all necessary updates including the joining link (MS Teams / Google Meet/Webex) for online sessions.
- Two-hours online session 3/4 days- per week will be held from 3.30 pm to 5.30 pm or 4:00 pm to 6:00 pm regularly on alternate days basis. Timing schedule/number of days per week may change on request of majority of the participants
- 25 % of the allocated time will be for real time project work implementation.
- Project work will be in group of students (group will be consisting of a maximum of 8 students).
- Submission of complete project report by the participant is mandatory for the Internship Certification– One copy of the project report needs to be submitted at the parent Institution/Department and another copy will be required to be submitted to UGCPL Training Team.
- Software based project work will be free of cost and sufficient requirement for the Internship Certification.
- Upon submission of project report in the concerned parent Institute/Department, the participants will be able to download their Internship Certificates within 10 to 15 working days from our website (www.ugcpl-india.com). The hard copy of the certificates will be submitted to the T&P Cell of the concerned University/Institute by UGCPL within 20 days time period.
- The participants will have to make their own arrangement of resources like Laptop or PC or smart phone and internet connectivity for attending the sessions through MS Teams/Google Meet/Webex platform.

HOW TO REGISTER

Please follow the following steps for successfully registering in our Training-cum-Internship program.

Step 1: Please select the area of Internships-cum-Industrial training you wish to enrol.

Step 2: Visit our website www.ugcpl-india.com

Step 3: Click on **Register Now** tab in top right corner given in our website by paying the necessary fees. OR you can also click in the given link: https://www.ugcpl-india.com/register.aspx

Step 4: You will receive confirmation of payment in e-mail post successful payment within 3 days.

Step 5: You will receive the Whatsapp Group Link for your specific batch/areas of Internship at least 3 days prior to start of Internship through e- mail. Please provide correct e-mail address during registration

Step 6: You will receive the class joining link and schedule details over whatsapp group as well as in your registered e-mail address.

Step 7: Once you have successfully completed the Internship programme and submitted the project report, you will be able to download your Internship Certificate.

Course Structure/Schedule of the Internship Program on

AI & Data Science

Prerequisites

This course is suitable for students, developers, data analysts, and statisticians with basic knowledge of Computer Science and python programming.

Module 1

Introduction to Python
History of Python
Using Python Interpreter
The Interpreter and its Environment
Using Python as Calculator
First Step towards Programming

Module 2

Basic Syntax
Python Identifiers
Python Keywords
Multi-Line Statements
Quotation in Python
Python Comments in Python
Command Line Arguments
Parsing Command-Line Arguments

Module 3

Variable Types
Assigning Values to Variables
Multiple Assignment
Standard Data Types
Python Numbers
Python Strings
Data Type Conversion

Module 4

Python Data structure
Introduction to List
Work on Tuples
Sets
Dictionary
List Comprehension
Set Comprehension
Dictionary Comprehension

Module 5

Conditional and Iterative statements
If Statements

Looping Techniques
for Statements
The range function
BREAK Statement

Module 6

Basic Operators
Types of Operators
Python Arithmetic Operators
Python Comparison Operators
Python Assignment Operators
Python Logical Operators
Python Identity Operators
Python Operators Precedence

Module 7

Functions
Defining a Function
Calling a Function
Global vs. Local variables
Locating Modules
Creating Modules
Packages in Python

Module 8

Classes in Python
Classes and instances
Classes method calls
Inheritance and Compositions
Static and Class Methods
Bound and Unbound Methods
Operator Overloading
Polymorphism

Module 9

Exception Handling in Python Programming
Default Exception Handler
Catching Exceptions
Raise an exception
User defined exception

Module 10

Introduction to Threads in python
thread module
threading module
Introduction to Pipes in python
anonymous pipes

Module 11

The Machine Learning Landscape
What Is Machine Learning?
Why Use Machine Learning?
Types of Machine Learning Systems
Supervised/Unsupervised Learning
Batch and Online Learning

Instance-Based Versus Model-Based Learning
Main Challenges of Machine Learning
Insufficient Quantity of Training Data
Non representative Training Data
Poor-Quality Data
Irrelevant Features
Overfitting the Training Data
Under fitting the Training Data
Testing and Validating

Module 12

NumPy Basics: Arrays and Vectorized Computation
The NumPy ndarray: A Multidimensional Array Object
Creating ndarrays
Data Types for ndarrays
Arithmetic with NumPy Arrays
Basic Indexing and Slicing
Boolean Indexing
Fancy Indexing
Transposing Arrays and Swapping Axes
Universal Functions: Fast Element-Wise Array Functions
Array-Oriented Programming with Arrays
Expressing Conditional Logic as Array Operations
Mathematical and Statistical Methods
Methods for Boolean Arrays
Sorting
Unique and Other Set Logic
File Input and Output with Arrays
Linear Algebra
Pseudorandom Number Generation
Example: Random Walks
Simulating Many Random Walks at Once

Module 13

Getting Started with pandas
Introduction to pandas Data Structures
Series
DataFrame
Index Objects
Essential Functionality
Reindexing
Dropping Entries from an Axis
Indexing, Selection, and Filtering
Integer Indexes
Arithmetic and Data Alignment
Function Application and Mapping
Sorting and Ranking
Axis Indexes with Duplicate Labels
Summarizing and Computing Descriptive Statistics
Correlation and Covariance

Unique Values, Value Counts, and Membership

Module 14

End-to-End Machine Learning Project
Working with Real Data
Look at the Big Picture
Frame the Problem
Select a Performance Measure
Check the Assumptions
Get the Data
Create the Workspace

Module 15

Download the Data
Take a Quick Look at the Data Structure
Create a Test Set
Discover and Visualize the Data to Gain Insights
Visualizing Geographical Data
Looking for Correlations
Experimenting with Attribute Combinations
Prepare the Data for Machine Learning Algorithms
Data Cleaning
Handling Text and Categorical Attributes
Custom Transformers
Feature Scaling
Transformation Pipelines
Select and Train a Model
Training and Evaluating on the Training Set
Better Evaluation Using Cross-Validation
Fine-Tune Your Model
Grid Search
Randomized Search
Ensemble Methods
Analyze the Best Models and Their Errors
Evaluate Your System on the Test Set
Launch, Monitor, and Maintain Your System

Module 16

Classification
MNIST
Training a Binary Classifier
Performance Measures
Measuring Accuracy Using Cross-Validation
Confusion Matrix

Module 17

Decision Tree
Training and visualizing a decision tree
Making predictions
Estimating class probabilities
The CART (Classification and Regression Tree) training algorithm
Computational Complexity

Gini Impurity or Entropy?
Regularization hyper parameters
Regression
Instability

Project work and documentation