



Indira Gandhi Delhi Technical University for Women

Centre of Excellence – AI

(Supported by Department of Science and Technology (DST), GOI)

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Department of AI and Data Sciences and AI Club

Six Weeks Online Internship Program

On

Python & Machine Learning

(6th June, 2022 to 18th July, 2022)

Patron

Dr (Mrs.) Amita Dev

Hon'ble Vice Chancellor, IGDTUW

Coordinator

Prof. Arun Sharma

Head – Dept. of AI and Data Sciences

Introduction:

Indira Gandhi Delhi Technical University for Women (IGDTUW) has been upgraded from Indira Gandhi Institute of Technology in May 2013 vide Delhi State Legislature Act 9, 2012, as a non-affiliating teaching and research University at Delhi to facilitate and promote studies, research, technology, innovation, incubation and extension work in emerging areas of professional education among women, with focus on engineering, technology, applied sciences, management and its allied areas with the objective to achieve excellence in these and related fields

Centre of Excellence (CoE) in Artificial Intelligence (AI) at IGDTUW, established by the support of Department of Science and Technology (DST), GOI caters to the requirements of Under-graduate, Post-graduate and Doctorate programs in the domains of AI, Machine Learning and Deep Learning and various applications including Robotics, Drones, NLP and others. The centre serves as the perfect platform with necessary hardware and software infrastructure to serve as a playground to the creative minds that solve real data driven problems at hand.

The Department of Artificial Intelligence and Data Science (AI&DS) in the university aims to focus on a four-tiered strategy of Education, Research, Development and Innovation (ERDI Strategy) in the field of AI, Machine Learning, Deep Learning and Data Sciences. Currently the department is running a 4 years UG program B.Tech – CSE(AI), which is specially designed to enable students to build intelligent machines, software, or applications with a cutting-edge combination of machine learning, analytics and visualization technologies.

The AI Club is a technical society with the goal of spreading awareness and knowledge on topics like machine learning, deep learning and robotics. We organize hackathons, international conferences, trainings, mentorships etc. in collaboration with reputed multinational companies like Deloitte, Incubate IND, Amazon, Urban Company, Coding Blocks among many others.

Objectives of Internship:

This internship aims to provide a concise introduction to the fundamental concepts in machine learning including mathematical foundations, programming tools and packages and popular machine learning and deep learning algorithms. The participants will gain knowledge in Machine Learning principles through a lot of practical applications covering industrial case walk-through and real-time applications.

Eligibility: UG, PG students and PhD Research Scholars

Course Fee: INR 1500/- for IGDTUW students and INR 2500/- for others

Batch size: 50

Resource Persons: Industry Professionals (IBM, Amazon, American Express and others), Academicians and Researchers

Certificate: At the end of the Internship, participants will get an Internship Certificate

Funding Support: During the internship students are required to make a project with the team members of maximum three participants. At the end of the internship, a project competition will be organized for demonstrating the projects. Innovative Projects may also get a chance for seed funding and mentorship for further development and commercialization/patent of their project from Anveshan Foundation. The projects with research flavour will be guided by the Faculty Mentors for writing a Research paper. University will support the Registration Fee (upto Rs. 5000/-) for presenting the Paper in the Conference. If a paper is accepted for SCOPUS Journal, students will also get a Cash reward.

At the end of the Internship, participants will get an Internship Certificate.

Internship Scheme: Internship has two components as mentioned below-

Components	Dates
Sessions (Theory and Lab)	6 th June – 4 th July, 2022
Project Work	5 th July – 18 th July , 2022

Important Dates

Last date to apply	:	4 th June, 2022
Internship Dates	:	6 th June, 2022 - 18 th July, 2022
Duration of the sessions	:	6 th June – 18 th July, 2022
Duration provided for project report	:	5 th July – 17 th July, 2022
Demo Day	:	18 th July, 2022

Registration Link: <https://forms.gle/zPHcqwgq6NfNUq9DA>

Bank's details for fee payment

Particulars	Details
Name & Address of the Beneficiary	Registrar, IGDTUW
Account Number of the Beneficiary	09001000018949
Name & Address of the Bank Branch	Punjab & Sind Bank, GGSIP University, Kashmere Gate, Delhi - 110006
Fee (Amount to be transferred)	Rs. 1500/- for IGDTUW students and Rs. 2500/- for outside IGDTUW students
IFSC Code	PSIB0001098

For any further inquiry, please contact: Dr. Ritu Rani (Research Associate , COE - AI)

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Major Contents of the session

UNIT I - Python and Data Pre-processing:

Python Programming (Python data type and basic objects, Functions, Boolean and Conditionals, List, Loop and list comprehensions, String and dictionaries, Working with external libraries)

NumPy (NumPy Array Object, Array indexing, Array Slicing, NumPy Object Operations, Building Basic Functions with NumPy)

Pandas (Creating, Reading and Writing, Indexing, Selecting & Assigning, Summary Functions and Maps, Grouping and Sorting, Data Types and Missing Values, Renaming and Combining, Case study)

Data Visualization (Intro to Seaborn and Matplotlib, Line Chart, Bar Charts and Heatmaps, Scatter Plots, Distributions, Choosing Plot Types and Custom Styles, Project)

Data Cleaning (Handling Missing Values, Scaling and Normalization, Parsing Dates, Character Encodings, Inconsistent Data Entry)

UNIT – II Machine Learning

How Models Work, Basic Data Exploration, Supervised Learning, Unsupervised Learning, Reinforcement Learning, Missing Values, Categorical Variables, First Machine Learning Model, Model Validation, Pipelines, Cross-Validation, XGBoost/ LightGBM/CatBoost, Data Leakage, Underfitting and Overfitting, Principal Component Analysis (PCA), Data Encoding Regression Analysis, Random Forests, Support Vector Machine, Clustering with K-Means, Intro to AutoML, Case Study

PROJECT WORK