Indira Gandhi Delhi Technical University for Women

Centre of Excellence – AI, IGDTUW

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

&

IGDTUW-Anveshan Foundation

Eight Weeks Online Internship Program

On

Machine Learning and Deep Learning

(8th June, 2021 to 31st July, 2021)

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 prefect platform with necessary hardware and software infrastructure to serve as playground to the creative minds that solve real data driven problems at hand.

IGDTUW Anveshan Foundation is incorporated as a Section 8 company under the Company's Act 2013, MCA, GoI. It is promoted by 'Indira Gandhi Delhi Technical University for Women (IGDTUW)' and recently received status of DST – TBI. Prime objective of IGDTUW Anveshan Foundation is to motivate and facilitate budding entrepreneurs towards their successful entrepreneurial journey, proving their success story, contributing entrepreneurial spawning and ultimately converging benefits to the society.

Objectives of Internship:

This internships 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/Deep 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 2000/- for IGDTUW students and INR 3000/- 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 from Centre of Excellence – AI, IGDTUW (supported by DST, Govt. of India) and IGDTUW-Anveshan Foundation (Incubation Centre of IGDTUW supported by Govt. of NCT of Delhi).

Funding Support

At the end of the Internship, a Demo Day will be organized for demonstrating all the projects developed. The team (of max. 3 participants) with best Project will be awarded with full fee refund. Next two teams will be awarded with 50% fee refund.

Innovative Projects may also get 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 Cash reward.

Internship Scheme: Internship has two components as mentioned below:-

Components	Dates
Online Sessions (Theory and Lab)	8th June – 15th July, 2021
Project Work	16th July – 30th July , 2021

Important Dates

Last date to apply	:	4th June, 2021
Internship Dates	:	8th June, 2021 - 31st July, 2021
Duration of online sessions	:	8th June – 15th July, 2021
Duration provided for project report	:	16th July – 30st July, 2021
Demo Day	:	31st July, 2021

Registration Link: https://bit.ly/3v46ocW

Bank's details for fee payment

Particulars	Details
Name & Address of the Beneficiary	IGDTUW Anveshan Foundation
Account Number of the Beneficiary	09001000021199
Name & Address of the Bank Branch	Punjab & Sind Bank, GGSIP University, Kashmere Gate, Delhi - 110006
Fee (Amount to be transferred)	Rs. 2000/- for IGDTUW students and Rs. 3000/- for outside IGDTUW students
IFSC Code	PSIB0001098

For any further inquiry, please contact:

Prof. Arun Sharma
Head – Dept. of AI and Data Sciences, Dean (Exams) , IGDTUW
Managing Director - IGDTUW – Anveshan Foundation
arunsharma@igdtuw.ac.in, 9899202168

Mr Rahul Sachdeva
Dy. Manager,
IGDTUW – Anveshan Foundation
anveshan@igdtuw.ac.in

Major Contents of online 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

UNIT – III Deep Learning

This section will give practical hands-on experience of Deep Learning using Keras/TensorFlow and PyTorch with appropriate case studies.

Introductory Deep Learning: A Single Neuron, Deep Neural Networks, Stochastic Gradient Descent, Overfitting and Underfitting, Dropout and Batch Normalization, Binary Classification

Convolutional Neural Network: The Convolution Classifier, Convolution and ReLU, Maximum Pooling, The Sliding Windows, Custom Convnets, Data Augmentation

Recurrent Neural Networks LSTM/GRU: Recurrent Neural Networks (RNN), Long Short Term Memory (LSTM), Gated Recurrent Units (GRU), Time Series Data Classification, Sequence to Sequence Learning

PROJECT WORK