



Indira Gandhi Delhi Technical University for Women

Centre of Excellence – AI

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

&

Department of CSE, IGDTUW and Anveshan Foundation, IGDTUW

Six Weeks Online Internship Program

On

Computer Vision and Deep Learning

(Blended Mode)

(5th June, 2023 to 17th July, 2023)

Patron

Dr (Mrs.) Amita Dev

Hon'ble Vice Chancellor, IGDTUW

Coordinator

Prof. Arun Sharma

Head – Dept. of Computer Science and Engineering

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 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 2000/- for IGDTUW students and INR 2500/- for others

Batch size: 50

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

Internship project/ Research Paper:

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
Online Sessions (Theory and Lab)	5 th June – 17 th July, 2023

Important Dates

Last date to apply : 31st May, 2023
Internship Dates : 5th June, 2023 - 17th July, 2023
Duration of online sessions : 5th June – 17th July, 2023
Demo Day : 17th July, 2023

Registration Link: <https://forms.gle/51DxSepPFwaTq2Yv5>

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. 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

- Introduction to Computer Vision
- Working with Images: Basic Image processing techniques using python and opencv
- Image Transformation, Image classification, Image segmentation, Video Transformation
- Concepts of Deep Learning
- Introduction and working with deep learning frameworks Tensorflow, Keras
- Data Cleaning
- Handling of Imbalanced datasets(techniques)
- Feature Selection Techniques
- Introduction to Convolutional Neural Network
- Types of CNN - Conv1D, Conv2D, Conv3D
- Project Implementation
- Introduction to Siamese
- Working with Hybrid Model like ConvLSTM
- Transfer Learning and Customization of pre-trained models
- Introduction to Image Segmentation
- Implementing YOLOv8 and comparison with YOLOv7 and other architectures
- U-Net Architecture for Image Segmentation
- Applications of U-Net architecture in computer Vision Projects
- Introduction to Autoencoders
- Simple and Convolutional Autoencoders
- Denoising Autoencoders
- Variational Autoencoders
- Generative Adversarial Networks (GAN)
- Variants of Generative Adversarial Networks (GAN)
- Hands on Implementation of Research Projects.
- Basic Introduction to NLP
- End to End Pipeline for NLP projects
- Project: Segmentation of Medical Images using UNet models
- Project: Handwritten Digit Generation using GAN models
- Project: Anime Character Generation using GAN models
- Project: Deepfake Detection using GAN models
- Project: Image Classification using CNN models/Transfer Learning
- Project: Object Detection using CNN models
- Project: Facial Recognition using CNN models
- Project: Emotion Recognition using CNN models
- Project: Emotion Recognition from Text/Sentiment Analysis

PROJECT WORK