Five Day Hands-On Workshop on

Advances in Deep Learning for Vision : From CNNs to Diffusion Models

16 – 20 June 2025

Organized by

Department of Computer Applications

MES COLLEGE MARAMPALLY

Aided college established in 1995
Affiliated to Mahatma Gandhi University , Kottayam
NAAC Reaccredited with A+ ISO 9001:2015 certified

In Association with
Department of Computer Applications

Cochin University of Science and Technology Kochi

MES at a Glance

MES College Marampally, a prestigious institution with A+ NAAC accreditation, Four-Star rated IIC, Ranked in NIRF and KIRF provides a conducive environment for academic and professional growth, as evidenced by its strong rankings and diverse student achievements. Situated in a serene campus with modern facilities and guided by the esteemed Muslim Educational Society, the college offers quality higher education and actively promotes innovation and holistic development.

About the Department

Established in 1995, the department is a leading center for computer education, offers comprehensive BCA-Honours(AICTE), MSc CS, and PhD programs, emphasizing both Theoretical Computer Science and Practical Software Development, supported by well-equipped labs and dedicated faculties. The department actively fosters a research-oriented environment and frequently organizes national-level workshops and conferences, contributing significantly to the field of computer science.

About the Workshop

This intensive 5-day workshop is designed to equip participants with the knowledge and practical skills to apply cutting-edge deep learning techniques. The workshop covers a range of advanced AI topics, starting with fundamental concepts and progressing to state-of-the-art models. Participants will gain hands-on experience through practical implementation sessions, focusing on key techniques for MRI data analysis.

Objective

This workshop aims to equip participants with a strong understanding of advanced deep learning techniques for medical image analysis, specifically focusing on MRI data.
You will learn to implement attention mechanisms like Squeeze-and-Excitation and self-attention within CNNs, as well as build and apply cutting-edge models like Vision Transformers. Furthermore, you'll explore generative models such as Variational Autoencoders for image enhancement and Denoising Diffusion Probabilistic Models for realistic MRI image generation.

Resource Person

Dr. Sabu M K
Professor
Department of Computer Applications,
Cochin University of Science and Technology, Kochi

Selection Process

No of seats available: 25

Interested participants are kindly invited to register through the link provided below. Only selected candidates will be required to pay the registration fee, details of which will be communicated at a later stage.

Who can Participate

The workshop is open to Faculty members, Research Scholars, Academicians and Industry professionals with basic knowledge in Machine Learning and Neural Networks.

Important dates

Last date for registration: **05-06-2025**
Notification to selected
participants   : **08-06-2025**

Patrons

Adv. A A Abul Hassan
Chairman, MES College Marampally
Mr. M A Mohammed
Secretary, MES College Marampally
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Dr. Joseph Deril K S
Associate Professor & Head
Department of Computer Applications
Dr. Vinod P
Professor and Head
Department of Computer Applications
Cochin University of Science and Technology

Coordinator

Dr. Leena C Sekhar
Associate Professor
Department of Computer Applications

Joint Coordinators

Mrs. Selin M
Assistant Professor
Department of Computer Applications
Dr. Bismin V Sherif
Assistant Professor
Department of Computer Applications

For Registration

Scan the QR code for registration

👉 **_Link for registration_**

Registration fee :
Faculties , Academicians & Industry
               professionals : Rs 4000/-
Research Scholars   : Rs. 3500/-

Technical Sessions - Schedule

DAY 1 (16-06-2025)

Forenoon Session
10.00 am – 1.00pm
- CNN Fundamentals
- MRI Image Classification — A CNN Implementation using PyTorch

Afternoon Session
1.30pm – 4.30 pm
- Introduction to Transfer Learning
- MRI Image Classification – Implementation using a well-known Pre-trained model

DAY 2 (17-06-2025)

Forenoon Session
9.30am – 1.00pm
- Introduction to Attention Mechanism
- Basic implementation in an Encoder-Decoder model using a time series dataset

Afternoon Session
1.30pm – 4.30 pm
- Attention Mechanism in CNN models.
- Introduction to Channel Attention.
- Implementation of Channel Attention in a CNN classifier to classify MRI data

DAY 3 (18-06-2025)

Forenoon Session
9.30am – 1.00pm
- Introduction to Squeeze-and-Excitation (SE) Attention.
- Implementation of SE Attention in a CNN classifier to classify MRI data
- Introduction to Self-Attention Mechanism.

Afternoon Session
1.30pm – 4.30 pm
- Implementation of Self-Attention in a CNN classifier to classify MRI data
- Introduction to Transformers.

DAY 4 (19-06-2025)

Forenoon Session
9.30am – 1.00pm
- Introduction to Vision Transformers
- Implementation of Vision Transformers in MRI image classification

Afternoon Session
1.30pm – 4.30 pm
- Introduction to Autoencoders and Variational Autoencoders
- How image enhancement is possible through VAE – A case study using MRI data

DAY 5 (20-06-2025)

Forenoon Session
9.30am – 1.00pm
- Introduction to Denoising Diffusion Probabilistic Models
- Implementing DDPM to generate realistic MRI images – Part 1

Afternoon Session
1.30pm – 4.30 pm
- Implementing DDPM to generate realistic MRI images – Part 2
- Q & A Session and Closing remarks

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