Title of the Course	STC on “Deep Learning Essentials for Engineering Applications”
TAC No	ICT-42
Dates and Venue	16 - 20 November 2026, NITTTR, Chandigarh
Course Contents	• Essentials of Python for Deep Learning • Neural Networks Fundamentals: From Perceptrons to Backpropagation • Mathematical Foundations for Deep Learning and Activation Functions • Advanced Deep Learning Approaches for Engineering Problems • Pose Detection using Convolutional Neural Network and Deep Learning • Pose Detection using Deep Learning No Code Tool • Diabetic Retinopathy Detection using Deep Learning • Synthetic Latent Fingerprint Generation Using GANs • Machine Condition Prediction Using Deep Neural Networks and Blockchain-Based Audit Trails • RNN, GNN and Generative AI • Transformer-Based Learning in Deep Learning • Transformer-Based Deep Learning for Automated Skin Cancer Detection and Classification • Explainable AI and Responsible AI: Building Transparent and Ethical AI Systems • Privacy Preservation for Deep Learning Models
Course Outcomes: Participants will be able to:	• Understand the fundamentals of neural networks, the mathematical foundations of deep learning and activation functions, and use Python for deep learning tasks. • Apply convolutional neural network and deep learning techniques, including no-code tools, for image-based applications such as pose detection. • Develop deep learning solutions using CNNs, GANs, RNNs, GNNs and transformers for engineering and domain-specific applications such as medical image analysis, biometrics and machine condition prediction. • Apply advanced deep learning approaches, generative AI and transformer-based models to solve real-world engineering problems. • Design transparent, ethical and privacy-preserving deep learning systems using explainable AI, responsible AI and privacy preservation techniques.
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