



 LIVE



Quest
Intelligence

STUDY
MART

মাতৃভাষায়...

Deep Learning & Generative AI

সম্পূর্ণ কোর্সে যা থাকছে

- ২৫ টি লাইভ ক্লাস।
- লাইভ ক্লাসের রেকর্ড প্রদান।
- ডিপ লার্নিং ও GenAI প্রোজেক্টস।
- Assignments & Certificate
- Kaggle Competition
- Job Guidelines

Course Name: Deep Learning & Generative AI

Total Class: 25

Weekly Classes: 02

Total Hours: 50 Hours

Course Fee: 6000 Taka

Domain: Computer Vision, NLP & Generative AI

Course Instructor:

Md. Asif Iqbal Fahim

Machine Learning Engineer at IdeaScale Bangladesh Ltd

Kaggle Competition Expert (X2)

Mentor at KaggleX Fellowship Program

NLP Mentor at Coursera

Machine Learning Researcher

Module 1: Introduction to Deep Learning and AI (4 Classes)

Class 1: Introduction to AI and Machine Learning

- Overview of AI, ML, and DL
- Key Concepts and Terminologies
- Historical Context and Evolution
- Key Concepts:
 - Generative AI
 - LLM
 - Vector Database
 - Hugging Face
 - LangChain
- Importance of Kaggle profile.
 - Kagge Competition
- The job of DL, LLM, Generative AI

Class 2: Basics of Neural Networks

- Artificial Neurons
- Activation Functions
 - Linear, Sigmoid, Softmax, Tanh
 - ReLu, Leaky ReLu,
- Dying Relu Problem
- ANN Architecture
- Forward and Backward Propagation
- Training Neural Networks with Python

Class 3: Deep Learning Frameworks and Tools

- Introduction to Popular Frameworks
 - Keras
 - TensorFlow
 - PyTorch
- Setting up the Environment
- Basic Operations
- Model Creation with Python

Class 4: Training Deep Learning Models

- Data Import, Preparation, and Preprocessing
- Loss Functions and Optimization Algorithms
 - Gradient Descent Optimizer
 - Variants of Gradient Descents (Momentum, Nesterov Momentum, AdaGrad, RMSProp, Adam and Nadam)
- Gradient Problems (Vanishing & Exploding)
- Key Concepts of-
 - Overfitting, Underfitting, and Bestfitting
 - Regularization Techniques

Module 2: Computer Vision (8 classes)

Class 5: Introduction to Computer Vision

- Overview of Computer Vision Tasks
- Image data Handling
- Data Augmentation

Class 6: Convolutional Neural Networks (CNNs)

- CNN architecture and components
- Convolution and pooling layers
- Fully connected layer

Class 7: Advanced CNN Architectures

- Popular CNN models (LeNet, AlexNet, VGG, ResNet, Inception)
- Transfer learning
- Fine-tuning

Class 8: Object Detection and Localization

- Techniques (R-CNN, Fast R-CNN, Faster R-CNN, YOLO)
- Implementation and applications

Class 9: Semantic Segmentation and Image Segmentation

- Techniques (U-Net, Fully Convolutional Networks)
- Practical examples and use cases
- Implementation with Python

Class 10: Generative Adversarial Networks (GANs) in Computer Vision

- Introduction to GANs
- Architecture
- Training of GANs with Python

Class 11: Applications of GANs in Computer Vision

- Image generation and transformation
- Style transfer and super-resolution
- Implementation with Python

Class 12: Computer Vision Projects

- Implementing a real-world project
- Best practices and troubleshooting
- Project Name: Automatic Dhaka traffic detection using the YOLO model.

Module 3: Natural Language Processing (NLP) (7 classes)

Class 13: Introduction to NLP

- Overview of NLP tasks
- Text preprocessing techniques
- Regex
- Implementation with Python

Class 14: Word Embeddings and Representations

- Tf-idf, Word2Vec, GloVe, FastText
- Contextual embeddings (ELMo, BERT)
- Implementation with Python

Class 15: Recurrent Neural Networks (RNNs) and Variants

- Basic RNN architecture
- Long Short-Term Memory (LSTM)
- Gated Recurrent Unit (GRU)
- Implementation with Python

Class 16: Attention Mechanisms and Transformers

- Attention mechanism
- Transformers
 - Input Embeddings
 - Positional Encodings
 - Encoder
 - Decoder
 - Output Layer

Class 17: Advanced Transformer Models

- BERT, GPT, T5, and their applications
- Fine-tuning pre-trained transformers
- Evaluate NLP models

Class 18: Sequence-to-Sequence Models and Applications

- Machine translation, text summarization
- Practical examples
- Implementation with Python

Class 19: NLP Projects

- Implementing a real-world project
- Best practices and troubleshooting
- Project Name: Word Spelling Correction

Module 4: Generative AI (6 classes)

Class 20: Introduction to Generative AI

- Overview of generative models
- Applications and use cases

Class 21: Variational Autoencoders (VAEs)

- VAE architecture and training
- Applications in image and text generation
- Implementation with Python

Class 22: Advanced GAN Techniques

- Variants of GANs (DCGAN, CycleGAN, StyleGAN)
- Training stability and challenges
- Implementation with Python

Class 23: Generative AI in NLP

- Langchain & Hugging Face Introduction
- LLM Model Introduce & Fine Tuning LLM Model (Gemma and LLAMA models)
- Text generation with LLM models
- Applications in chatbots and content creation
- Implementation with Python

Class 24: Generative AI Project

Project Name: LLM Langchain Project using Vector Database

Class 25: Job & Final Project Guidelines

Contact Details:

[Sohan Khan](#)

Course Coordinator, aiQuest Intelligence & Study Mart

Cell: +8801704265972 (Call/WhatsApp)

Facebook Community: [Join Our Community!](#)

Visit Our Pages: [Study Mart](#), [aiQuest Intelligence](#)

Watch Free Courses: <https://www.aiquest.org/free-courses>