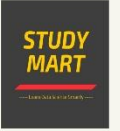


চলুন মাতৃভাষায় ভাসায় Artificial Intelligence শিখি!
বাংলাদেশে এই প্রথম ওমাস মেয়াদি কমপ্লিট ডীপ লার্নিং,
এন.এল.পি. এবং কম্পিউটার ভিসন লাইভ কোর্স!!!!



Deep Learning, NLP & Computer Vision



Course Instructor:

Mr. Mejbah Ahammad

Tableau Certified Data Scientist

M. Sc. in Computer Science

Visit: www.aquest.org

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Become an expert in:-



Keras



Course Details:

Title: Deep Learning, NLP & Computer Vision with Python

Course Duration: 50 Hours (21-22 Live Classes/ 2 Classes per week/8.00 PM BD Time)

Prerequisites: Basic knowledge of Python programming language.

Course Fees: 5000 Taka.

Instructor: Mr. Mejbah Ahammad

Tableau Certified Data Scientist

Watch Demo Class: <https://youtu.be/zzH-xUcO-ro>

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Module 01: Introductory Discussion on Deep Learning

1) Why AI?

- a. Introduction to Deep Learning
- b. Use cases for deep learning.
- c. Deep Learning's importance 5. How do neural networks work?
- d. The Function of Neural Networks Class

2) Software Installation:

- a. Latest Python
- b. PyCharm
- c. Visual Studio
- d. Anaconda
- e. Atom

3) Python Basics:

- a. Introduction of Python
- b. Python objects and Data structure basics
- c. Python statements
- d. Variables and names
- e. Strings and text
- f. Reading and writing files
- g. Classes and objects
- h. Functions
- i. Conditionals and control flow
- j. List and dictionaries Loops

4) Basic Terminology:

- a. Neuron
- b. Weights and Bias
- c. CNN (Convolutional neural network)
- d. Pooling
- e. Data Augmentation, Position augmentation, Color augmentation
- f. Activation Functions
- g. Neural Network
- h. MLP (Multi-Layer perceptron)
- i. Forward Propagation and Backpropagation
- j. Cost Function
- k. Padding
- l. Gradient Descent
- m. Learning Rate
- n. Batches, Epochs, Dropout, Batch Normalization, and Filters
- o. Gradient Problem
 - i. Vanishing Gradient Problem
 - ii. Exploding Gradient Problem

Module 02: Computer Vision / Image Processing Basics

- 1) Image Masking
- 2) Image Color Channels Merging and Splitting
- 3) Gray scale Histograms
- 4) Color Histograms
- 5) Histogram Equalization
- 6) Image Blurring
- 7) Image Threshold
- 8) Image Gradient Detection
- 9) Canny Edge Detection
- 10) Image Contours
- 11) Image Transformation –
 - a) Rotation
 - b) Resizing
 - c) Flipping
 - d) Cropping
 - e) Operations
 - f) Translation
- 12) Image Bitwise Logical Operations
- 13) Numpy manipulation
- 14) Image Processing with Python, NumPy, and Matplotlib
- 15) Operations on Images
- 16) Image Filtering
- 17) Random Sampling

Module 03: Deep Learning with Tensorflow and Pytorch:

- 1) Variables,
- 2) Automated distinction,
- 3) How to use Keras to train artificial neural networks,
- 4) Preprocessing of data,
- 5) Transformation of data,
- 6) The artificial neural network construction process,
- 7) How to display the performance of a model,
- 8) Regularize dropouts to combat overfitting.
- 9) How to use batch normalization to speed up network training,
- 10) How to use early halting to stop model training at the appropriate moment,
- 11) How to use checkpoints to preserve the best model,
- 12) Speculate based on the test set,
- 13) Examine the confusion matrix.
- 14) How to load and save models in Keras,
- 15) How to use cross-validation to assess the Keras model,
- 16) How to adjust the Keras model hyperparameters,
- 17) How to adjust the network's settings

- 18) constructing CNN using TensorFlow,
- 19) MiDaS — Model on Depth Estimation
- 20) HydraNets in Computer Vision

Module 04: Depth of Convolutional Neural Network

- 1) Describe CNN
- 2) How do CNNs function?
- 3) Convolution,
- 4) Padding,
- 5) Use ReLU,
- 6) Pooling,
- 7) regularization of dropouts,
- 8) Flattening,
- 9) complete link
- 10) role of activation,
- 11) TensorFlow's Convolutional Neural Networks (CNN)

Module 05: Optimization Methods and Regularization

- 1) Understanding and Implementing Gradient Descent
- 2) Gradient Descent with Python
- 3) Stochastic Gradient Descent (SGD)
- 4) Gradient Descent Algorithms and Variations
- 5) Regularization Techniques
- 6) Regularization for Image

Module 06: Natural Language Processing (Recurrent Neural Network):

- 1) Tokenization
- 2) Stemming
- 3) Lemmatization
- 4) Part of speech Tags
- 5) Stopwords
- 6) Bag of Words
- 7) Comparison Between BagofWords and Word2Vec
- 8) TF-IDF
- 9) Regular expression
- 10) Weaknesses of RNNs
 - a) Vanishing gradient problem
 - b) Exploding gradient problem
- 11) Long-Short Term Memory (LSTM)
- 12) Applications of LSTM

- 13) Bidirectional LSTM
- 14) Time series analysis with LSTM in TensorFlow
- 15) Stemming & Lemmatization
- 16) Text Preprocessing Detailed Step-By-Step

Module 07: Transfer Learning:

- 1) Inductive transfer learning
- 2) Unsupervised transfer learning
- 3) Transductive transfer learning
- 4) Homogeneous transfer learning
- 5) Heterogeneous transfer learning
- 6) Why use transfer learning?
- 7) When do you use transfer learning?
- 8) When does transfer learning not work?
- 9) How to implement transfer learning?
- 10) Transfer learning with image data
- 11) Transfer learning with natural language processing
- 12) Transformers with TensorFlow

Module 08: Projects:

1. Real-time Facial Expression Recognition
2. A Basic Motion Detection System using Open CV
3. Complete Dummies Guide to Computer Vision with Python
4. Optical Character Recognition - OCR
5. Object Detection using Pre-Trained Models - Introduction
6. SSD MobileNet - Object Detection using Pre-Trained Models
7. Mask R-CNN - Object Detection using Pre-Trained Models
8. YOLO - Object Detection using Pre-Trained Models
9. Face Distance Value of Face Recognition
10. Neural Machine Translation

To enroll in the course:

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