

Artificial Intelligence

Artificial Intelligence the capability of a machine to imitate intelligent human behavior. It refers to the simulation of human intelligence in computer, machines or computer-controlled robots that are programmed to think like humans and mimic their actions. It includes learning, reasoning, and perception.

Prerequisites:

Participants must have basic knowledge of any programming language C ++ or Python & Machine Learning

You Will Learn How To

- ✓ A way to determine and measure problem complexity
- ✓ Python Programming
- ✓ ML Library Scikit , NumPy, Matplotlib, Pandas, Theano, TensorFlow
- ✓ Learning to solve statistics and mathematical concepts
- ✓ Supervised and unsupervised learning
- ✓ Classification and Regression
- ✓ Artificial Neural Network(ANN) Programming
- ✓ Clustering Problems
- ✓ Deep Learning

DAY1:

Python Basics: Introduction to Python Programming

- What is Python
- Understanding the IDLE
- Python basics and string manipulation
- lists, tuples, dictionaries, variables
- Control Structure – If loop, For loop and while Loop
- Single line loops
- Writing user-defined functions
- Working with Class & Inheritance

Data Structure & Data Manipulation in Python

- Intro to Numpy Arrays
- Creating arrays
- Indexing, Data Processing using Arrays
- Mathematical computing basics
- Basic statistics
- File Input and Output
- Getting Started with Pandas
- Data Acquisition (Import & Export)
- Selection and Filtering
- Combining and Merging Data Frames
- Removing Duplicates & String Manipulation

Understanding the Tools

Numpy, Pandas, Theano

Artificial Intelligence: Introduction

- Artificial Intelligence
- Environmental Constraints
- Various Agent Types
- PEAS Analysis of Problem
- Process flow for an AI agent
- Machine Learning Introduction
- Supervised & Unsupervised Learning
- Regression & Classification Problems
- What makes a Machine Learning Expert?

DAY 1:

Artificial Neural Networks with Case Study

- Neurons, ANN & Working
- Single Layer Perceptron Model
- Multilayer Neural Network
- Feed Forward Neural Network
- Cost Function Formation
- Applying Gradient Descent Algorithm
- Backpropagation Algorithm & Mathematical Modelling

- Programming Flow for backpropagation algorithm
- Use Cases of ANN
- Programming SLNN using Python
- Programming MLNN using Python
- Digit Recognition using MLNN
- XOR Logic using MLNN & Backpropagation

Gradient descent variants

- Batch gradient descent
- Stochastic gradient descent
- Mini-batch gradient descent

Clustering Demystified:

- Unsupervised Learning
- Clustering Introduction
- Clustering Problems
- Clustering Algorithms
- K-Means Clustering
- Handling K-Means Clustering
- Maths behind KMeans Clustering
- K Means from scratch
- Mean shift Introduction
- Dynamically weight
- Intruder Detection

Introduction to TensorFlow & Keras

- Introduction Tensorflow
- Tensorflow
- MNIST
- The Programming Model
- Data Model, Tensor Board
- Introducing Feed Forward Neural Nets
- Softmax Classifier & ReLU Classifier
- Deep Learning Applications
- Working with Keras
- Building Neural Network with keras

- Examples and use cases

Deep Learning with TensorFlow & Keras

- Deep Learning
- Concept discussion
- Algorithms statistics & maths
- S. Gradient descent
- Entropy
- Data Preprocessing
- Creating Multiple Hidden Layers
- Deep Learning with Binary Converter
- Input Layers
- Multiple Hidden Layers of 500 Neurons
- Output Layers
- Cost function
- Optimizers
- 10k samples vs 1 lakh samples
- Applying into practical

Benefits:

1. Availability: Machines doesn't require any rest or breaks as like human beings. So, 24*7 availability is there.
2. It can be used in medical services.
3. It can be used in Crime justice system.
4. It can use in day to day applications.
5. It can be use for economy, business & industries.