

Content

Summer Training and Internship on AI & Machine Learning using Machine Learning

Basics of AI & Introduction

- Artificial Intelligence
- Environmental Constraints
- Various Agent Types
- PEAS Analysis of Problem
- CSP – Introduction
- Process flow for an AI agent
- Machine Learning Introduction
- Supervised & Unsupervised Learning
- Regression & Classification Problems
- Advantages & Disadvantages of Naïve Bayes Models

Introduction to Python Programming

- What is Python?
- Installing Anaconda
- Understanding the Spyder Integrated Development Environment (IDE)
- 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
- Object-oriented programming
- Working with Class & Inheritance

Data Structure & Data Manipulation in Python

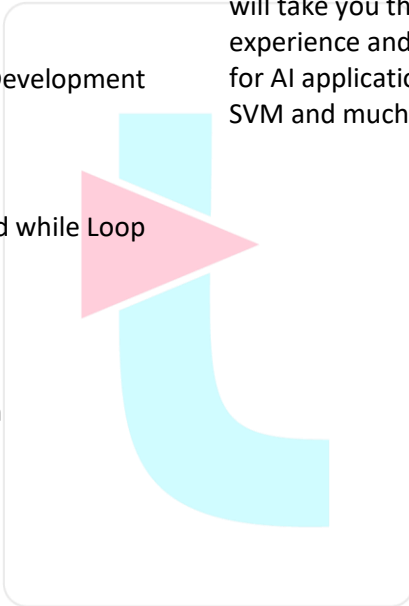
- Intro to Numpy Arrays
- Creating arrays
- Indexing, Data Processing using Arrays
- Mathematical computing basics
- Basic statistics
- File Input and Output
- Getting Started with Pandas
- Data Acquisition (Import & Export)
- Selection and Filtering
- Combining and Merging Data Frames
- Removing Duplicates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

Visualization in python

- Introduction to Visualization
- Visualization Importance
- Working with Python visualization libraries
- Matplotlib
- Creating Line Plots, Bar Charts, Pie Charts, Histograms, Scatter Plots

About course:

If you are a computer geek, if you love coding and wish to explore dimensionless world of programming, TechTrunk brings you the core Artificial Intelligence Training which will take you through core development and programming experience and will make you expert in writing algorithms for AI applications, you will learn Machine Learning, , NLP, SVM and much more.



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Linear Regression

- Regression Problem Analysis
- Mathematical modelling of Regression Model
- Gradient Descent Algorithm
- Programming Process Flow
- Use cases
- Programming Using python
- Building simple Univariate Linear Regression Model
- Multivariate Regression Model
- Boston Housing Prizes Prediction
- Cancer Detection Predictive Analysis
- Best Fit Line and Linear Regression

Decision Trees

- Forming a Decision Tree
- Components of Decision Tree
- Mathematics of Decision Tree
- Decision Tree Evaluation
- Practical Examples & Case Study
- **Random Forest**

Naïve Bayes

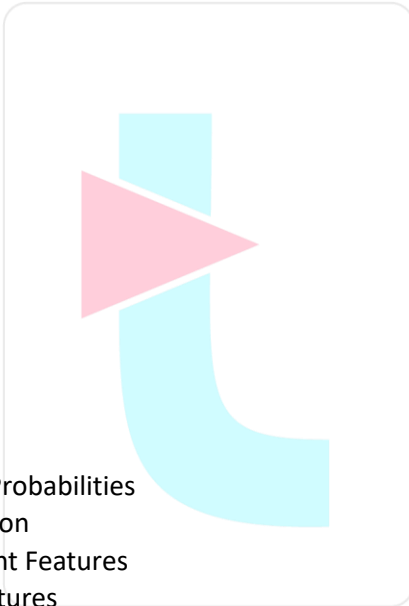
- Bayesian Theorem
- Probabilities - The Prior and Posterior Probabilities
- Conditional and Joint Probabilities Notion
- Traditional Approach - Extract Important Features
- Naive Approach - Independence of Features Assumption
- Data Processing - Discretization of Features

Logistic Regression

- Problem Analysis
- Cost Function Formation
- Mathematical Modelling
- Use Cases
- Digit Recognition using Logistic Regression

Artificial Neural Networks

- 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

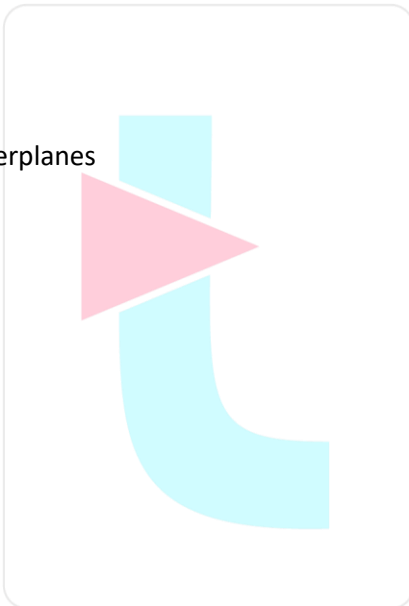


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- Programming Flow for backpropagation algorithm
- Use Cases of ANN
- Programming SLNN using Python
- Programming MLNN using Python
- Digit Recognition using MLNN
- XOR Logic using MLNN & Backpropagation
- Diabetes Data Predictive Analysis using ANN
- Project – Banking Problem Analysis – When the customer will leave?
- Project – Medical Problem Analysis

Support Vector Machine

- Concept and Working Principle
- Mathematical Modelling
- Optimization Function Formation
- The Kernel Method and Nonlinear Hyperplanes
- Use Cases
- Programming SVM using Python
- Character recognition using SVM
- Regression problem using SVM
- Wisconsin Cancer Detection using SVM



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