MACHINE LEARNING TRAINING COURSE CONTENT

SECTION 1: INTRODUCTION TO ML
- What is ML?
- Why ML?
- Opportunities in ML
- What is ML models?
- Why R and Python is popular?

SECTION 2: ML MODEL OVERVIEW
- Introduction to ML Model.
- Data Handling
- Data Pre-processing
- Types of ML Model.
- Supervised and Unsupervised.
- How to test your Data?
- Cross validation techniques

SECTION 3: LINEAR REGRESSION
- What is Linear Regression?
- Gradient Descent overview.
- Gradient Descent Calculations.
- R and Python Overview.
- How to improve your model?

SECTION 4: OVERFITTING
- Overfitting Overview
- How to use Linear Regression for Overfitting?
- How to avoid Overfitting?
- Bias-Variance Tradeoff.
- Regularization – Ridge, LASSO
- ANOVA, F tests overview.
- What is Logistic Regression?
- Classification with Logistic Regression.

Web: www.credosystemz.com
Maximum Likelihood Estimation.
Build an end to end model with Logistic Regression using scikit Learn.
How to build a model in the Industry?

SECTION 5: DECISION TREES

Why Decision Tree?
Entropy, Gini Impurity overview
Implement Overfitting.
How to improve the Decision Tree model without Overfitting?
Bagging, Boosting
Random Forest
AdaBoost, Gradient Boost

SECTION 6: K-NN

Distance based model with kNN.
Value of k – overview.

SECTION 7: SUPPORT VECTOR MACHINES(SVM)

Power of SVM overview.
Why SVM?
What is Kernel Functions?
What are the Kernel Functions available?
How to Build an OCR(Optical Character Reader) with the help of SVM and Kernel functions?
Neural Networks overview.
Why Neural Networks?
What is Neural Network Architecture?
How to build AND, OR, NOT, XOR, XNOR Logic Gates with Neural Network?
What is Forward & Backward Propagation?
List of Activation Functions.
Vanishing Gradient problem

SECTION 8: DEEP NEURAL NETWORKS

Optimization methods overview.
Gradient Descent with Momentum, RMSProp, ADAM.
Learning Rate Decay.
Xavier Initialization.
Introduction to Keras and Tensorflow(TF)
Deep Learning in Keras with TensorFlow as the backend.

SECTION 9: UNSUPERVISED LEARNING
Clustering overview.
k-means Clustering.
Hierarchical clustering.

SECTION 10: PCA

- Principal Component Analysis (PCA).
- Maths behind PCA.
- Engine Recommendation.
- Content and Collaborative Filtering.
- Market Basket Analysis
- What is Apriori Rule?

SECTION 11: COMPUTER VISION

- Image Detection, Image Classification, Localization.
- Convolutional Neural Networks (CNN) overview.
- Strides, Padding methods
- Convolutional, Padding and Fully Connected layers
- Sliding Window
- Edge Detection

SECTION 12: ADVANCED COMPUTER VISION

- YOLO ALgorithm – You Only Look Once
- Introduction to classical networks like LeNet5
- IoU
- Introduction to Natural Language Processing (NLP)
- Text Preprocessing
- Lemmatization, Stemming
- Syntactical Parsing, Entity Parsing
- Develop a chatbot with the above concepts of NLP and Neural Networks

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