**Must read topics in Deep Learning**

**(Please do not limit yourself up to these topics)**

**Please refer LMS for related PPTs**

* Overview of Different Types of Transfer Functions in Neural Networks

· Basic Concept of Linear Separability in Classification Problems

· Tabulation of Different Types of Activation Functions in Neural Networks

· Importance of Data Normalization in Machine Learning

· Definition and Significance of Thresholding in Image Processing

· Understanding the Importance of Hyperparameters in Model Training

· Comparison between Overfitting and Underfitting in Machine Learning

· Brief Explanation of Gradient Descent Algorithm

· Basic Concept of Backpropagation Algorithm in Neural Networks

· Difference Between Feedforward and Recurrent Neural Networks

· Process Cycle of Machine Learning

· Applications of Speech Recognition in Machine Learning

· Distinction Between Learning and Training in Machine Learning

· Elaboration of Forward Propagation in Artificial Neural Networks

· Relationship Between Cost Function and Gradient Descent in Neural Networks

· Challenge Associated with Artificial Neural Networks (with Diagram)

· Significance of Perceptron in Perceptron Model

· Utilization of Linear and Non-linear Activation Functions in Neural Networks

· Calculation of Total Reward in a Reinforcement Learning Scenario

· Concept of Long Short-Term Memory (LSTM) in Recurrent Neural Networks

· Sigmoid Function Utilization in Perceptron Model

· Architectural Model for Image Classification using Artificial Neural Networks

· Application of Convergence Theorem for Perceptron Model

· Identification of Issues in Machine Learning

· Working Cycle of Single Layer Perceptron Model

· Weight Initialization Techniques in Deep Neural Networks

· Limitations of Single-layer Perceptron and Introduction to Multilayer Perceptron

· Advantages and Disadvantages of Artificial Neural Networks in Time Series Forecasting

· Simplification of Learning Rate in Gradient Descent

· Critique of Activation Functions in Different Scenarios

· Challenges with Vanishing Gradients in RNNs and Role of LSTM

· Implementation of Convolutional Neural Network (CNN) for Image Classification

· Contributions of Dropout, DropConnect, and Batch Normalization in Deep Learning

· Difference Between Gradient Descent and Stochastic Gradient Descent

· Comparison between Linear and Non-linear Activation Functions

· Conditions for Applying Gradient Descent

· Limitations of Zero Initialization of Weights in Neural Networks

· Architecture and Limitations of Feedforward Neural Networks

· Working of Various Activation Functions in Neural Networks

· Classification vs. Regression in Machine Learning

· Explanation of Transfer Functions in Deep Learning

· Image Classification Models in Deep Learning

· Performance Measures for Classification in Deep Learning

· Supervised vs. Unsupervised Deep Learning Procedures

· Distinction Between LSTM and Gated Recurrent Units

· Discussion on Momentum Optimizer in Deep Learning

· Importance of Hidden State in Recurrent Neural Networks

· Definition and Significance of Thresholding in Image Processing

· Basic Concept of Linear Separability in Classification Problems

· Overview of Different Types of Transfer Functions in Neural Networks