

Introduction to TensorFlow

- What is TensorFlow
- The Evolution of TensorFlow
- Why Choose TensorFlow
- Installing TensorFlow

Understanding Tensors

- What are Tensors
- Tensor Shapes and Types
- Basic Tensor Operations

Computational Graphs

- Variables and Constants
- Operations and Sessions
- Placeholders (Deprecated in 2.x)

Building Neural Networks

- Fundamentals of Neural Networks
- Activation Functions
- Loss Functions and Optimizers

Implementing a Simple Neural Network

- Dataset Preparation
- Model Architecture
- Training and Evaluation

Convolutional Neural Networks (CNNs)

- Understanding Convolutions
- Pooling Layers
- Implementing a CNN for Image Classification

Recurrent Neural Networks (RNNs)

- The Need for RNNs
- LSTM and GRU Units
- Time Series Prediction with RNNs

Using the Keras API

- What is Keras?
- Sequential vs. Functional API
- Building Complex Models

Model Deployment

- Saving and Loading Models
- TensorFlow Serving
- Deploying Models on Mobile and Edge Devices

Advanced Topics

- Custom Layers and Models
- TensorBoard for Visualization
- Hyperparameter Tuning