TensorFlow

Course description

This Training helps you in learning with tensors; install TensorFlow, simple statistics and plotting, architecture and Integration of TensorFlow with different open-source frameworks. You will hands-on sessions on a computation using data flow graphs, Loading And Exploring The Data, Visualizing Traffic Sign Statistics, R Interface to TensorFlow, Feature Extraction and Modeling the Neural Network...etc

Student Take away

- Study Material
- Learning stuff
- Sample project for practice

TensorFlow Online Training curriculum

Introduction to Deep Learning

- What is Deep Learning?
- Limitations of Machine Learning
- The core idea behind Deep Learning
- Advantage of Deep Learning over Machine learning
- Real-Life use cases of Deep Learning
- Applications of Deep Learning
- Getting Started with TensorFlow

What is TensorFlow?

- TensorFlow code-basics
- Hello World with TensorFlow
- Linear Regression
- Nonlinear Regression
- Logistic Regression
- Activation Functions

Basics of Defining Neural Networks

- Graph Visualization
- Constants, Placeholders, Variables
- Creating a Model
- Step by Step - Use-Case Implementation
- The Biological Neuron
- The Preceptor
- Multi-Layer Feed-Forward Networks

Basics of Defining Neural Networks continues...

- Training Neural Networks
- Back propagation Learning
- Gradient Descent
- Stochastic Gradient Descent
- Quasi-Newton Optimization Methods
- Generative vs Discriminative Models
- Loss Functions
- Loss Function Notation
- Loss Functions for Regression
- Loss Functions for Classification
- Loss Functions for Reconstruction
- Hyper parameters
- Learning Rate
- Regularization
- Momentum
- Sparsity

Convolution Neural Networks (CNN)

- Main concepts of CNN's
- CNN's in action
- LeNet5
- Implementing a LeNet-5 step by step
- Dataset preparation
- Fine-tuning implementation
- Inception-v3
- Emotion recognition with CNN's

Optimizing TensorFlow Auto-encoders

- How does an auto-encoder work?
- Implementing auto-encoders with TensorFlow
- Improving auto-encoder robustness
- Fraud analytics with auto-encoders

Recurrent Neural Networks

- Working principles of RNNs
- RNN and the gradient vanishing-exploding problem
- Implementing an RNN for spam prediction
- Developing a predictive model for time series data
- An LSTM predictive model for sentiment analysis
- Human activity recognition using LSTM model

Heterogeneous and Distributed Computing

- GPGPU computing
- The TensorFlow GPU setup

Heterogeneous and Distributed Computing continues...

- Distributed computing
- The distributed TensorFlow setup

Advanced TensorFlow Programming

- tf.estimator
- TF Learn
- Pretty Tensor
- Keras

Recommendation Systems Using Factorization Machines

- Recommendation systems
- Movie recommendation using collaborative filtering
- Factorization machines for recommendation systems
- Improved factorization machines

Reinforcement Learning

- The RL problem
- Open AI Gym
- The Q-Learning algorithm
- Deep Q-learning