

**TensorFlow and Keras in a Day**

**Course Number:** PYTH-234
**Duration:** 1 day

**Overview**

TensorFlow has become an integral part of Machine and Deep Learning techniques. This TensorFlow and Keras training course teaches attendees the fundamentals of how to build Artificial Neural Networks (ANNs) using Keras and TensorFlow.

**Prerequisites**

All students must have basic knowledge of Python and machine learning fundamentals.

**Materials**

All TensorFlow and Keras training students receive courseware covering the toics in the class.

**Software Needed on Each Student PC**

Students must have the Google Chrome web browser and Internet access.

**Objectives**

* Understand TensorFlow fundamentals
* Work with Tensors
* Build Artificial Neural Networks (regression)
* Build Artificial Neural Networks (classification)
* Work with transfer learning

**Outline**

* Introduction
* TensorFlow Fundamentals
	+ Machine Learning versus Deep Learning: what’s the difference?
	+ What is TensorFlow?
	+ Why use TensorFlow?
* Working with Tensors
	+ What are Tensors?
	+ Creating Tensors
	+ Getting Tensor attributes
	+ Manipulating Tensors
	+ Math operations on Tensors
	+ NumPy & Tensors
* Artificial Neural Networks: Regression
	+ Learn to build a neural network for a regression problem
	+ Understand building a sequential network with layers
	+ Components that make up neural networks (loss function, architecture, optimization functions)
	+ ANN for regression
* Artificial Neural Network: Classification
	+ Build a neural network for a classification problem
	+ Loss functions, metrics, and optimizers used for Classification
	+ ANN for classification
* Transfer Learning
	+ Understand what transfer learning is with TensorFlow
	+ Learn about transfer learning types
	+ Using TensorFlow Hub for pre-trained models
	+ Using TensorFlow Callbacks
	+ Building a model with Keras Functional API
* Conclusion