



Working with TensorFlow

Explore Algorithms, Machine Learning, and Data Mining Concepts, and How TensorFlow Implements Them

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Course Snapshot

- **Course: TTML6802: Working with TensorFlow**
- **Duration:** 3 days
- **Audience:** This intermediate-level course is geared for experienced developers, analysts or others (with Python or R experience) who are intending to start using learning about and working with machine learning algorithms, machine learning, deep learning fundamentals and concepts. Attending students should be proficient in Python.
- **Hands-on Learning:** This lab-intensive, hands-on course combines engaging expert lessons, demos and group discussions with real-world, skills-focused machine-based labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **blended learning format**. Please also ask about our **Self-Paced / Video / QuickSkills** or **Mini-Camp / Short Course** flexible delivery options.
- **Public Schedule:** This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Overview

The abundance of data and affordable cloud scale has led to an explosion of interest in Deep Learning. Google has released an excellent library called TensorFlow to open-source, allowing state-of-the-art machine learning done at scale, complete with GPU-based acceleration.

Working with TensorFlow is a hands-on course that explores algorithms, machine learning, and data mining concepts, and how TensorFlow implements them, working in a hands-on manner. This “skills-centric” course is about 50% hands-on lab and 50% lecture, integrating practical hands-on labs designed to reinforce fundamental skills, concepts and best practices introduced throughout the course.

Learning Objectives

Our engaging instructors and mentors are highly-experienced practitioners who bring years of current, modern "on-the-job" into every classroom and hands-on project.

This “skills-centric” course combines extensive practical exercises designed to reinforce fundamental skills, concepts and best practices taught throughout the course. Throughout the course, led by our expert team, students will explore:

- Core Deep Learning and Machine Learning math essentials
- TensorFlow Overview and Basics.
- TensorFlow Operations
- Neural Networks With TensorFlow
- Deep Learning With TensorFlow

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional big data, analytics, AI, machine learning, programming, Python/R and other related topics that may be blended with this course for a track that best suits your needs. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience & Pre-Requisites

This in an **intermediate-level** course is geared for experienced developers or others (with prior Python experience) intending to start using and working with TensorFlow.

Students should have attended or have incoming skills equivalent to those in this course:

- Strong foundational mathematics in Linear Algebra and Probability; Matrix Transformation, Regressions, Standard Deviation, Statistics, Classification, etc.
- Basic knowledge of machine learning and deep learning algorithms
- Strong basic Python Skills

Take Before: Attending students should have incoming skills equivalent to those in the course(s) listed below or should have attended the course(s) as a pre-requisite:

- TTML5506-P: Machine Learning Essentials with Python

Take Next / Follow-on Courses: This course is a core component of our **AI & Machine Learning Skills Path**, designed to train participants of all skill levels in modern AI, Machine Learning and Analytics skills across the enterprise. We offer courses in next level AI and Machine Learning, Deep Learning, Natural Language Processing, Applied Machine Learning (Chatbots, Intelligent Web) and many more related titles. Please contact us for details and next step recommendations based on your specific roles and goals.

Enhanced Learning Support: Please ask about our **Pre-Training Class Prep & Primer offerings, Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services and Extended Learning Support** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.

1. Machine Learning & Deep Learning Overview

- This is summary of ML/DL Concepts (from the class – Machine Learning & Deep Learning Fundamentals)
 - Mathematical Concepts
 - ML Overview
 - DL Overview

2. TensorFlow – Overview & Basics

- TensorFlow – What is it? History & Background
- Use cases & Key Applications
- Machine Learning & Deep Learning Basics
- Environment, Configuration Settings & Installation
- TensorFlow Primitives
- Declaring Tensors
- Declaring Placeholders and Variables
- Working with Matrices
- Declaring Operations
- Operations in Computational Graph
- Nested Operations

- Multiple Layers
- Implementing Loss Functions
- Implementing Back Propagation

3. Machine Learning With TensorFlow

- Linear Regression Review
- Linear Regression Using TensorFlow
- Support Vector Machines (SVM) Review
- SVM using TensorFlow
- Nearest Neighbor Method Review
- Nearest Neighbor Method using TensorFlow

4. Neural Networks With TensorFlow

- Neural Networks Review
- Optimization and Operational Gates
- Working with Activation Functions
- Implementing One-Layer Neural Network
- Implementing Different Layers

- Implementing Multilayer Neural Networks

5. Deep Neural Networks With TensorFlow

- Models and Overview
 - Single Hidden Layer
 - Multiple Hidden Layer
- Convolutional Neural Network Overview & Implementation
- CNN Architecture
- Recurrent Neural Network Overview & Implementation
- RNN Architecture

6. TensorFlow: Additional Topics

- TensorFlow Extensions
 - Scikit Flow
 - TFLearn
 - TF-Slim
 - TensorLayer
 - Keras
- Unit Testing
- Taking your implementation to production
- Other Misc Topics

Hands-on Setup Made Simple! All course software (limited versions, for course use only), courseware files or course notes (as applicable), labs / data sets and solutions (as applicable) are provided for you in our “easy access / no install required” high-speed remote lab environment. Our dedicated live tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. All your coursework can be accessed or downloaded after class, so you never lose your work or materials. Please ask for details.

For More Information

All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses**, **self-paced learning** options, **recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training**, **Boot Camps**, **Skills Immersion Programs**, **Reskilling Programs**, **Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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