Enthought

ACADEMY

Deep Learning for Scientists & Engineers

About This Course

This is a hands-on course. There will be 20 hours of instruction, exercises, and breaks. In the end, you will not only have learned new concepts, but practiced them.

This course counts toward the Machine Learning Track certification in Enthought Academy.

Certificate Awarded Upon Completion Of Course

Course Overview

Deep Learning for Scientists & Engineers provides students with a practical introduction to deep learning using Keras and TensorFlow.

This course focuses on the fundamental model architecture used in deep learning: the neural network.

We will begin by building a solid foundation of the basics of deep learning and will gradually progress into more advanced topics like model training and evaluation.

While the course emphasizes a practical approach to deep learning, there are times where just enough theory is covered to understand the why behind certain modeling procedures.

Packages: tensorflow

Lectures

Intro to Deep Learning & Neural Networks
Artificial Intelligence (AI), Machine Learning (ML)

Keras & TensorFlow
Neural Network Architecture (Layers & Activation Functions)

Building Neural Networks
Sequential Model, Compiling & Fitting Models

Tuning Neural Networks
Data Partitioning, Model Learning History

Saving & Loading Models
Model Checkpointing, Transfer Learning

Training Neural Networks I
Automatic Differentiation

Training Neural Networks II
Custom Training Loops

Custom Reporting
Keras Callbacks

Evaluating Neural Networks I
Evaluation Metrics, Diagnostics & Remedies

Evaluating Neural Networks II
Model Appraisal

Prerequisites

This course requires basic proficiency with Python and the scientific Python stack. Some practical experience with Jupyter Notebooks, NumPy (ndarrays), Pandas (DataFrames), and scientific visualization in Python using Matplotlib are essential to working with the code and concepts presented in this course.

If you have taken Enthought's **Python Foundations for Scientists & Engineers**, you have the requisite background knowledge for this course. While not a strict requirement, it is strongly recommended to have taken Enthought's **Machine Learning for Scientists & Engineers** (or have a working knowledge of basic machine learning principles) prior to taking this course.

About Our Instructors

Enthought instructors have advanced degrees in scientific fields such as physics engineering, computer science, and mathematics, and all have extensive experience through research and consulting in applying Python to solve complex problems across a range of industries allowing them to bring their real world experience to the classroom every day.