<u>**View Full Course Details including Latest Schedule Online**</u>

PYTHON
Python Deep Learning

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Course Overview

This 5 day, instructor led course is designed for ISEA engineers and operation research analysts who need the software engineering skillset: particularly research and development engineers and analysts. The engineers will be using the software skillset to write deep learning scripts for CBM+, data analysis, ship data, etc. At conclusion of training students will be more proficient with:

- Basic Python programming
- How to use Numpy and Matplotlib in the context of deep learning.
- How to use Jupyter Notebook with a remote server.
- The principles and practices of supervised learning and deep learning.
- How to use neural networks to solve regression and classification problems.
- How to use unsupervised learning for visualization and dimensionality reduction.
- How to use convolutional neural networks for image classification. • How to use TensorFlow, TensorBoard, and Keras.
- How to optimize and tune the performance of deep neural networks.
- How to prepare datasets and manage the process around deep learning.
- Deep learning concepts and techniques in current use such as gradient descent algorithms, learning curves, regularization, dropout, batch normalization, the Inception architecture, and residual networks.

Schedule

DATE	LOCATION	
5/06/24 - 5/10/24 (5 days)	**Live Online** Open	<u>Contact Us</u>
6/24/24 - 6/28/24 (5 days)	**Live Online** Open	<u>Contact Us</u>

Program Level

Advanced

Training Delivery Methods

Group Live

Duration

5 Days / 32 hours Training

CPE credits

26 NASBA CPE Credits

Field of Study

Information Technology

Advanced Prep

N/A

Course Registration

Candidates can choose to register for the course by via any of the below methods:

- Email: Sales@phoenixts.com
- Phone: 301-582-8200
- Website: www.phoenixts.com

Upon registration completion candidates are sent an automated course registration email that includes attachments with specific information on the class and location as well as pre-course study and test preparation material approved by the course vendor. The text of the email contains a registration confirmation as well as the location, date, time and contact person of the class.

Online enrolment closes three days before course start date.

On the first day of class, candidates are provided with instructions to register with the exam provider before the exam date.

Complaint Resolution Policy

To view our complete Complaint Resolution Policy policy please click here: Complaint Resolution Policy

Refunds and Cancellations

To view our complete Refund and Cancellation policy please click here: Refund and Cancellation Policy

Course Outline

Part I

Module 1: The Foundations of Machine Learning

- Advantages of Machine Learning
- Disadvantages of Machine Learning
- Subjects Involved in Machine Learning
    - Statistics
    - Brain Modeling
    - Adaptive Control Theory
    - Psychological Modeling
    - Artificial Intelligence
    - Evolutionary Models
- Programming Languages
    - R
    - Python

Module 2: Machine Learning Models

- Supervised Machine Learning
- Unsupervised or Reinforcement Learning
- How to Evaluate Machine Learning Models

Module 3: An Introduction to Nueral Networks

- Historical Background
- Why Use Neural Networks?
- Neural Networks vs. Conventional Computers
- Types of Neural Networks

- Fully Connected Neural Network
- Feed-Forward Networks
- Convolutional Neural Networks
- Feedback Networks
- Perceptrons
- Recurrent Neural Networks
- Generative Adversarial Network

Module 4: An Introduction to Deep Learning

- Supervised Modes
- Unsupervised Modes
- How to Obtain Impressive Results Using Deep Learning
- Examples of Deep Learning
- Automated Driving
- Defense and Aerospace
- Medical Research
- Industrial Automation
- Electronics
- How Does Deep Learning Work?
- Why Deep Learning is Better Than Traditional Learning Methods
- Choosing Between Deep Learning and Machine Learning

Module 5: How to Create and Train Deep Learning Models

- Training from Scratch
- Transfer Learning
- Feature Extraction

Module 6: Applications of Deep Learning

- Recognize applications of deep learning.

Module 7: Activation Functions Used to Develop Deep Learning Models

- Popular Activation Functions
- Choosing the Right Activation Function

Part II

Module 8: An Introduction to Python

- Running Python
- Installing on Windows
- Installing on Other Systems
- Choosing the Right Version

- Python Keywords
- Understanding the Naming Convention
- Creating and Assigning Values to Variables
- Recognizing Different Types of Variables
- Working with Dynamic Typing
- The None Variable
- Computers Only Take Zeros and ones
- Deep Learning Libraries in Python.

Module 9: How to Clean Data Using Python

- Dropping Columns in a Data Frame
- Changing the Index of a Data Frame
- Tidying up Fields in the Data
- Cleaning the Entire Data Set Using the applymap().

Module 10: How to Manipulate Data Using Python

- Starting with Numpy
  - Creating Arrays
  - Array Indexing
  - Array Slicing
  - Array Concatenation

Module 11: Python Environment for Deep Learning

- Installation of Keras, TensorFlow, and Theano

Modul 12: Regression Problem Using Keras

- Develop the Baseline Model
- Modeling a Standardized Data Set
- Tune the Network Typology
- Evaluate a Deeper Network Topology
- Evaluate a Wider Network Topology

Module 13: How to Develop a Neural Network in Python using Keras

- Load Data
- Define the Model
- Compile the Model
- Fit the Model
- Evaluate the Model
- Tie It All Together
- Make Predictions

Module 14: How to Evaluate the Performance of a Deep Learning Model

- Empirically Evaluate Network Configurations
- Data Splitting
- Manual K-Fold Cross Validation

Module 15: How to Save and Load Deep Learning Models

- Save Your Neural Network Model to JSON
- Save Your Neural Network Model to YAML

Module 16: Reducing Dropouts in Deep Learning Models

- Dropout Regularization for Neural Networks
- Regularizing Dropouts in Keras
    - Using Dropout on Visible Layers
    - Using Dropout on Hidden Layers
- Tips for Using Dropout

Python Deep Learning Training FAQs

What is the recommended experience for this course?

Class participants should have experience in object-oriented programming or at the minimum understand the principles of object-oriented programming. Attendees should have taken a college-level algebra course, which covered the following:

- Continuous functions of one or more variables
- Linear and non-linear functions
- Exponential functions
- Basic differential calculus
- Basic statistics
- Basic linear algebra

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