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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 2 Days

## Cisco Introduction to Artificial Intelligence (CIAI)



### About this course:

Artificial Intelligence (AI) and Machine Learning (ML) is a dominant trend in the enterprise with the ubiquity of large amounts of observed data, the rise of distributed computing frameworks, and the prevalence of large hardware-accelerated computing infrastructures. There are several compute platforms

designed and purpose-built for Deep Learning (DL). These platforms should be storage and I/O-optimized to deliver industry-leading performance to speed up Deep Learning (DL) using neural networks and large data sets to train computers for complex tasks. The *CIAI - Cisco Introduction to Artificial Intelligence* instructor-led course introduces the learner to the Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) essentials in addition to compute platforms such as Cisco UCS, through a combination of lecture and hands-on labs.

## **Course Objective:**

- Understand Big Data and Data Science concepts
- List and describe the concepts, major features, algorithms, and benefits of AL/ML/DL
- Use AL/ML/DL techniques, such as Neural Networks.
- Get familiar with Data Science and Infrastructure AI Tools and soft wares
- Describe the Cisco AI/ML/DL Computing Solutions Portfolio alignment
- Describe the Cisco UCS C480 ML M5 Deep Learning Server

## **Audience:**

- Cisco Integrators/Partners
- Consulting Systems Engineers
- Technical Solutions Architects
- Data Center Administrators and Engineers
- Anyone interested in AI/ML/DL

## **Prerequisite:**

The knowledge and skills that a learner should have before attending this course include:

- Understanding of server design and architecture.
- Familiarity with Cisco UCS, Storage, and Server Virtualization

## **Course Outline:**

### **Data and AI/ML/DL Fundamentals**

Introduction to Big Data  
Introduction to Data Science  
Introduction to Data Engineering  
Introduction to Artificial Intelligence (AI)  
Introduction to Machine Learning (ML)  
Introduction to Deep Learning (DL)  
AI/ML/DL Use Cases

### **Artificial Intelligence (AI)**

AI Concept, Methods, and Techniques  
Key AI Challenges (Customer and Provider)  
AI Business Drives  
Evolution of AI Algorithms

## **Machine Learning (ML)**

Machine Learning (ML) Algorithms  
Supervised Learning  
Unsupervised Learning

## **Deep Learning (DL)**

Deep Learning Project Phases  
Custom AI Deep Learning Workflow  
Deep Learning (DL) Algorithms

## **Neural Networks**

Neural Networks Fundamentals  
Neural Architecture Search (NAS)  
Cisco Neural Architecture Construction (NAC)

## **Data Science and Infrastructure AI Tools**

Big Data with AI/ML/DL  
Kubeflow  
SkyMind SKIL  
Cloudera Data Science Workbench  
DL Frameworks > Handwritten Math  
Kubernetes  
SkyMind SKIL  
Demo: Classifying Handwritten Digits with TensorFlow

## **Cisco Computing Solutions/UCS AI/ML/DL Portfolio**

The Big data journey  
Cisco Computing Solutions for AI  
Test, development, and model tuning  
    Cisco HyperFlex HX24 and Cisco UCS C240 M5  
Machine learning and deep learning  
    Cisco UCS C480 ML M5  
Inferencing  
    Cisco HyperFlex HX240  
    Cisco UCS C220 M5 and Cisco UCS C240 M

## **Cisco UCS C480 ML Rack Server**

Cisco UCS C480 ML M5 Overview  
Cisco UCS C480 ML M5 Features and Benefits

- System Front and Rear View
- CPU, GPU, and IO Module
- Internal NVLink Topology
- Storage Options – RAID Card and Drives
- Connectivity with Lan on Motherboard (LoM)
- Cisco UCS C480 ML M5 Management
  - Integrated Management Controller (IMC) – OoBM
  - Cisco UCS Unified Management
  - Cisco Intersight (cloud-based)
- Cisco UCS C480 ML M5 Deployment
  - Standalone
  - Cisco UCS managed environment.
- Cisco UCS C480ML Rack Server for Deep Learning

## Labs

- Lab 1: Deep Learning Framework Setup (TensorFlow and Jupyter Stack)
- Lab 2: Classifying Handwritten Digits with TensorFlow
- Lab 3: DL Chatbot - Training a Model to Have a Conversation with a Google Chatbot similar to Alexa or Siri
- Lab 4: ML Training a Machine to play "The Snake Game"

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