USAII® | UNITED STATES ARTIFICIAL INTELLIGENCE INSTITUTE

SG TVET GROUP

PROGRAM CURRICULUM

CAIE - Program Curriculum

According to the latest studies done by USAII®, Artificial Intelligence's demand is increasing at a rapid pace with new roles such as AI/ML developer, AI/ML engineer, AI/ML architect, AI/ML consultant, AI/ML scientist, and more. Therefore, at USAII®, we analyzed the trends and concluded that candidates with the right knowledge and skills could choose to take on any demanding role, such as an AI Engineer, AI Developer and more. The program curriculum below is meticulously planned and designed to counter any demands of an emerging AI Engineer/Developer.

Artificial Intelligence

- Big Data and AI
- AI in Banking
- ChatbotsGraph and Graph Databases
- Artificial Intelligence on the Cloud
- Exploring Feature Selection
- White Box XAI for AI Bias and Ethics

12%

Essential Machine Learning

- Machine Learning and Python
- Unsupervised Learning: Detecting Patterns
- Visualizing Data for Machine Learning
- Supervised Learning: Classification and Regression
- Dimensionality Reduction

13%

Deep Learning

- TensorFlow and its Functionalities
- TensorFlow for Mobile and IoT
- Deep Learning with KERAS
- Confusion Matrix
- Deep Learning with TensorFlow on the Cloud
- Life Cycle of Model Creation
- Activation Functions
- Underfitting and Overfitting

17%

Deep Reinforcement Learning

- Deep Q Network (DQN)
- Actor-Critic and Policy Gradient
- Deep Q-Learning
- Method Learning DDPG, TD3, and SAC

08%

Natural Language Processing (NLP)

- Natural Language Processing using Python
- Word Embeddings and Text Distance Metrics
- Text Data Analysis
- Transform Text File into Data Structures
- MetricsDocument, Sentence, and Character-Level Embeddings

15%

Computer Vision and GANs

- Computer Vision, Raspberry Pi
- Traffic Signals
- Object Detection Using OpenCV
- Realtime Face, Age and Gender Detection
- Multiclassifier to Recognize
- Face detection and recognition
- Image, Age and Gender Detection
- GANs: Applications, Architecture, Variants and Advantages

20%

Reinforcement Learning

- Reinforcement Learning
- Monte Carlo (MC) Methods
- Multi-Armed Bandit(MAB) Problem
- Bellman Equation and Dynamic Programming
- Temporal Difference Learning

15%

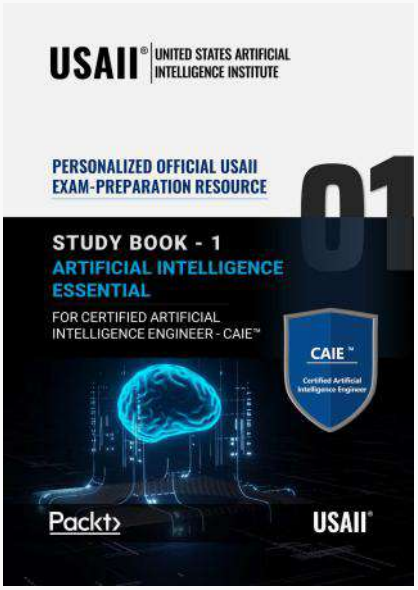
Resource Center

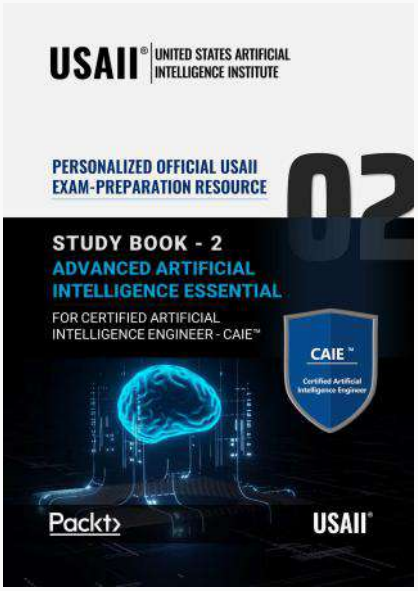
USAII® provides you with a 'resource center' which includes study books and e-learning. We also update our curriculum at regular intervals to stay relevant and reflect modern Artificial Intelligence trends.

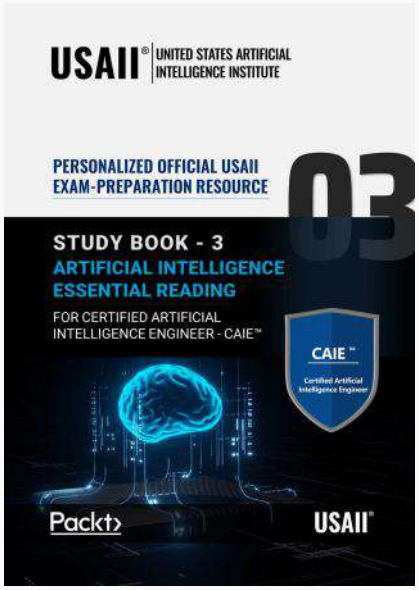
Program is designed as such that you require only **8-10 hours per week** to grab the essential knowledge and get certified.

eBooks for Download:

The resource center includes USAII® **Study-Book 1, Study-Book 2, and Study-Book 3** – all these ebooks cover advanced Artificial Intelligence, Machine Learning, and relevant topics like Deep Learning, Reinforcement Learning, Python, and more specially designed for the CAIE™ candidates.







Workshops, Videos, and Practice Code:

The CAIE™ e-learning program also includes HD Videos, Workshops, and Practice Codes to help you put your learning into practice and prepare you for the real challenges at a very early stage of your career. Below are the topics for videos and workshops.

Hands-On Transfer Learning with TensorFlow 2.0

Learn hands-on implementation with the power of TensorFlow 2.0. Transfer learning involves using a pre-trained model on a new problem. It is currently very popular in Deep Learning because it enables you to train Deep Neural Networks with comparatively little data. In Transfer learning, knowledge of an already trained Machine Learning model is applied to a different but related problem.

Hands-on Computer Vision with PyTorch 1.x

Deep learning is the driving force behind many recent advances in various computer vision (CV) applications. This video takes a hands-on approach to help you to solve over 50 CV problems using PyTorch1.x on real-world datasets.

Hands-On TensorBoard for PyTorch Developers

TensorBoard is a visualization library for TensorFlow that plots training runs, tensors, and graphs. TensorBoard has been natively supported since the PyTorch 1.1 release.

Computer Vision: Face Recognition Quick Starter in Python

Face detection and face recognition are the most popular aspects of computer vision. They are widely used by governments and organizations for surveillance and policing. Moreover, they also have applications in our day-to-day life, such as face unlocking mobile phones.
This course will help you delve into face recognition using Python without dealing with all the complexities and mathematics associated with the deep learning process.

Machine Learning with Real World Projects

This course will cover complex theory, algorithms, and coding libraries in a very simple way that any beginner can easily grasp. Here, we will walk you step-by-step into the World of Machine Learning.

Hands-On Deep Q-Learning

Q-learning is a machine learning algorithm used to solve optimization problems in artificial intelligence (AI). It is one of the most popular fields of study among AI researchers. In this course, you will learn practical hands-on-deep Q-Learning.

Autonomous Cars: Deep Learning and Computer Vision in Python

Self-driving cars have emerged to be one of the most transformative technologies. Fueled by deep learning algorithms, they are rapidly developing and creating new opportunities in the mobility sector. This is the first and one of the only courses that make practical use of deep learning and build a self-driving car. Deep learning jobs command some of the highest salaries in the development world.

Python for Everybody: The Ultimate Python 3 Bootcamp

Python is one of the most sought-after skills in the software domain. Whether you want to delve into video game development, web development, or artificial intelligence, learning Python is an important step. This course will help you to learn Python in detail.

Reinforcement Learning with Python

You will learn reinforcement learning with python, explained in detail in this course.

THE MACHINE LEARNING WORKSHOP

In this course, you will take a comprehensive and step-by-step approach to understanding machine learning.

THE DEEP LEARNING WITH KERAS WORKSHOP

Here, you will discover how to leverage Keras, the powerful and easy-to-use open source Python library for developing and evaluating deep learning models.