UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

AI ENGINEER MASTER'S PROGRAM (Option 1)

In collaboration with IBM

Contents

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

About the Program

This AI Engineer Master's Program, in collaboration with IBM, covers the crucial skills you need for a successful career in Artificial Intelligence (AI). Master the concepts of Machine Learning (ML), Deep Learning Python (one of the best programming languages for AI), and much more to excel in the field of AI. You will also learn how to design and implement intelligent AI/ML models, advanced artificial neural networks, and much more — including how ChatGPT works, is being used, or can be applied in different industries

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Key Features of the Program

- Obtain industry-recognized IBM certificates for IBM courses

- Exclusive Hackathons and Ask Me Anything sessions by IBM

- Live online masterclasses delivered by IBM experts

- 3 Capstone and 12 industry-relevant projects from the likes of Amazon, Walmart, Mercedes Benz, and Uber

- 8X higher live interaction in live online classes by industry experts

- Top-notch curriculum with integrated labs

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

About IBM and Collaboration

Headquartered in New York, IBM is a leading cognitive solution and cloud platform company with a plethora of technology and consulting services. Each year, IBM invests approximately $6 billion in research and development and has achieved five Nobel Laureates, nine US National Medals of Technology and Innovation, five US National Medals of Science, six Turing Awards, and ten inductees in the US Inventors Hall of Fame. Introduces students to the best-in-class applied learning experience, making them experts in AI. This program, in collaboration with IBM, delivers a top-notch, industry-relevant curriculum and prepares students for any job role in the Artificial Intelligence and Machine Learning domain.

UpSkill YourSelf
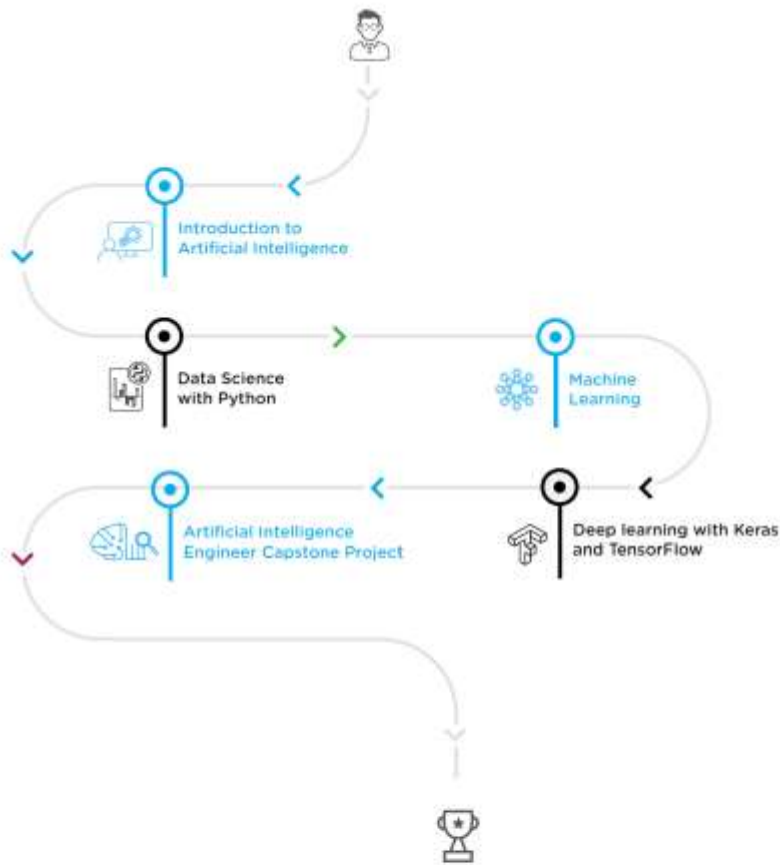Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Learning Path Visualization

Introduction to
Artificial Intelligence

Data Science
with Python

Machine
Learning

Artificial Intelligence
Engineer Capstone Project

Deep learning with Keras
and TensorFlow

Electives

> Use Cases for ChatGPT

> Python for Data Science

> Advanced Deep Learning and
Computer Vision

> Natural Language Processing and
Speech Recognition

> Industry Masterclass Delivered by IBM

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Program Outcomes

- Learn about the major applications of Artificial Intelligence across various use cases across various fields like customer service, financial services, healthcare, etc. Implement classical Artificial Intelligence techniques such as search algorithms, neural networks, and tracking.
- Gain the ability to apply Artificial Intelligence techniques for problem-solving and explain the limitations of current Artificial Intelligence techniques.
- Master the skills and tools used by the most innovative Artificial Intelligence teams across the globe as you delve into specialisations and gain experience solving real-world challenges.
- Design and build your intelligent agents and apply them to create practical Artificial Intelligence projects, including games,
- Machine Learning models, logic constraint satisfaction problems, knowledge-based systems, probabilistic models,
- agent decision-making functions and more.
- Understand the concepts of TensorFlow, its main functions, operations, and the execution pipeline.

- Understand and master the concepts and principles of Machine Learning, including its mathematical and heuristic aspects.
- Master and comprehend advanced topics such as convolutional neural networks, recurrent neural networks, training deep networks, and high-level interfaces.
- Learn to deploy deep learning models on Docker, Kubernetes, and in serverless environments (cloud)
- Understand the fundamentals of Natural Language Processing using the most popular library, Python's Natural Language Toolkit (NLTK).

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Who Should Enroll in this Program?

With the demand for Artificial Intelligence in a broad range of industries such as banking and finance, manufacturing, transport and logistics, healthcare, home

maintenance, and customer service, the Artificial Intelligence course is well suited for a variety of profiles like:

- Developers aspiring to be an 'Artificial Intelligence Engineer' or Machine Learning engineers
- Analytics managers who are leading a team of analysts
- Information architects who want to gain expertise in Artificial Intelligence algorithms
- Graduates looking to build a career in Artificial Intelligence and Machine Learning.

Introduction to Artificial Intelligence

Introduction to Artificial Intelligence course is designed to help learners decode the mystery of Artificial Intelligence and understand its business applications. The course provides an overview of Artificial Intelligence concepts and workflows, Machine Learning, Deep Learning, and performance metrics. You'll learn the difference between supervised and unsupervised learning—be exposed to use cases and see how clustering and classification algorithms help identify Artificial Intelligence business applications.

Key Learning Objectives

- Meaning, purpose, scope, stages, and applications of Artificial Intelligence
- Fundamental concepts of Machine Learning and Deep Learning
- Difference between supervised, semi-supervised and unsupervised
- learning
- Machine Learning workflow and how to implement the steps actively
- The role of performance metrics and how to identify their essential
- methods

Course Curriculum

Lesson 1 - Decoding Artificial Intelligence

Lesson 2 - Fundamentals of Machine Learning and Deep Learning

Lesson 3 - Machine Learning Workflow

Lesson 4 - Performance Metrics

Data Science with Python

This Data Science with Python course will establish your mastery of Data Science and analytics techniques using Python. With this Python for Data Science Course, you'll learn the essential concepts of Python programming and gain in-depth knowledge in data analytics, Machine Learning, data visualisation, web scraping, and natural language processing. Python is required for many Data Science positions, so jump-start your career with this interactive, hands-on course.

Key Learning Objectives

- Gain an in-depth understanding of Data Science processes, data wrangling, data exploration, data visualisation, hypothesis building, and testing. You will also learn the basics of statistics.

- Install the required Python environment and other auxiliary tools and libraries.

- Understand the essential concepts of Python programming, such as data types, tuples, lists, dicts, basic operators and functions.

- Perform high-level mathematical computing using the NumPy package and its vast library of mathematical functions.

- Perform scientific and technical computing using the SciPy package and its sub-packages, such as Integrate, Optimize, Statistics, IO, and Weave.

- Perform data analysis and manipulation using data structures and tools provided in the Pandas package.

- Gain expertise in Machine Learning using the Scikit-Learn package

- Gain an in-depth understanding of supervised learning and unsupervised learning models such as linear regression, logistic regression, clustering, dimensionality reduction, K-NN and pipeline

- Use the Scikit-Learn package for natural language processing.

- Use the matplotlib library of Python for data visualisation

- Extract useful data from websites by performing web scraping using Python.

● Integrate Python with Hadoop, Spark, and MapReduce

Course Curriculum

Lesson 1: Data Science Overview

Lesson 2: Data Analytics Overview

Lesson 3: Statistical Analysis and Business Applications

Lesson 4: Python Environment Setup and Essentials

Lesson 5: Mathematical Computing with Python (NumPy)

Lesson 6 - Scientific computing with Python (Scipy)

Lesson 7 - Data Manipulation with Pandas

Lesson 8 - Machine Learning with Scikit–Learn

Lesson 9 - Natural Language Processing with Scikit Learn

Lesson 10 - Data Visualization in Python using matplotlib

Lesson 11 - Web Scraping with BeautifulSoup

Lesson 12 - Python integration with Hadoop MapReduce and Spark

Machine Learning

Machine Learning course will make you an expert in Machine Learning, a form of Artificial Intelligence that automates data analysis to enable computers to learn and adapt through experience to do specific tasks without explicit programming. You will master machine learning concepts and techniques, including supervised and unsupervised learning, mathematical and heuristic aspects, and hands-on modelling to develop algorithms and prepare yourself for your role with advanced machine learning knowledge.

UpSkill YourSelf
Learn • Earn • Grow

Key Learning Objectives

1. Master the concepts of supervised and unsupervised learning, recommendation engine, and time series modelling.

2. Gain practical mastery over principles, algorithms, and applications of Machine Learning through a hands-on approach that includes working on four major end-to-end projects and 25+ hands-on exercises

3. Acquire thorough knowledge of the statistical and heuristic aspects of Machine Learning

4. Implement models such as support vector machines, kernel SVM, naive Bayes, decision tree classifier, random forest classifier, logistic regression, K-means clustering and more in Python

5. Validate Machine Learning models and decode various accuracy metrics. Improve the final models using another set of optimisation algorithms, which include Boosting and bagging techniques.

6. Comprehend the theoretical concepts and how they relate to the practical aspects of Machine Learning.

Course Curriculum

Lesson 1: Introduction to Artificial Intelligence and Machine Learning

Lesson 2: Data Preprocessing

Lesson 3: Supervised Learning

Lesson 4: Feature Engineering

Lesson 5: Supervised Learning-Classification

Lesson 6: Unsupervised learning

Lesson 7: Time Series Modelling

Lesson 8: Ensemble Learning

Lesson 9: Recommender Systems

Lesson 10: Text Mining

Deep learning with Keras and TensorFlow

This Deep Learning with TensorFlow course by IBM will refine your machine learning knowledge and make you an expert in deep learning using TensorFlow. Master the concepts of deep learning and TensorFlow to build artificial neural networks and traverse layers of data abstraction. This course will help you learn to unlock the power of data and prepare you for new horizons in AI.

Key Learning Objectives

Understand the difference between linear and non-linear regression

Comprehend convolutional neural networks and their applications

Gain familiarity with recurrent neural networks (RNN) and
autoencoders

Learn how to filter with a restricted Boltzmann machine (RBM)

Course Curriculum

Lesson 1 - Introduction to TensorFlow

Lesson 2 – Convolutional Neural Networks (CNN)

Lesson 3 – Recurrent Neural Networks (RNN)

Lesson 4 - Unsupervised Learning

Lesson 5 - Autoencoders

Artificial Intelligence Capstone Project

The Artificial Intelligence Capstone project will allow you to implement the skills you learned in the Masters of Artificial Intelligence. With dedicated mentoring sessions, you'll know how to solve a real industry-aligned problem. You'll learn various Artificial Intelligence-based supervised and unsupervised techniques like Regression, SVM, Tree-based algorithms, NLP, etc. The project is the final step in the learning path and will help you to showcase your expertise to employers.

Key Learning Objectives

The Online Artificial Intelligence Capstone course will bring you through the Artificial Intelligence decision cycle, including Exploratory Data Analysis, building and fine-tuning a model with cutting-edge Artificial Intelligence-based algorithms and representing results. The project milestones are as follows:

Exploratory Data Analysis - In this step, you will apply various data processing techniques to determine the features and correlation between them, transformations required to make the data sense, new features, construction, etc.

Model Building and fitting - This will be performed using Machine Learning algorithms like regression, multinomial Naïve Bayes, SVM, tree-based algorithms, etc.

Unsupervised learning - Clustering to group similar transactions/reviews using NLP and related techniques to devise meaningful conclusions.

Electives

Use Cases for ChatGPT

The Use Cases of ChatGPT course is designed to provide learners with an in-depth understanding of the different applications and use cases of ChatGPT, a cutting-edge AI-based natural language processing application developed by OpenAI. Through a series of self-paced, video-based lectures, you will learn the new ways you can leverage the capabilities of this powerful AI tool in different industries and for multiple tasks.

Key Learning Objectives

What is ChatGPT?

Learn to automate WhatsApp using ChatGPT

Automate Excel using ChatGPT

Learn about the Top 10 ChatGPT use cases

Python for Data Science

Kickstart your learning of Python for Data Science with this introductory course, carefully crafted by IBM. Upon completion of this course, you will be able to write Python scripts and perform fundamental, hands-on data analysis using the Jupyter-based lab environment.

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Key Learning Objectives

Online Python for Data Science course will bring you

Write your first Python program by implementing concepts of variables, strings, functions, loops, and conditions

Understand the nuances of lists, sets, dictionaries, conditions, branching, objects, and classes

Work with data in Python, such as loading, working, and saving data with Pandas, and reading and writing files

Topics Covered:

Python Basics

Python Data Structures

Python Programming Fundamentals

Working with Data in Python

Working with NumPy Arrays

UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Advanced Deep Learning and Computer Vision

Take the next big step toward advancing your Deep Learning skills with this high-level course. This Advanced Deep Learning and Computer Vision course includes Computer Vision Basics with Python, Advanced Computer Vision with OpenCV 4, Keras, and TensorFlow 2; Computer Vision for OCR and Object Detection, and PyTorch for Deep Learning and Computer Vision to ensure you are prepared for your Deep Learning and computer vision journey.

Key Learning Objectives

- Understand 2D scaling transformations, 2D geometric transformations, binary morphology, image filtering, and shape detection through transformation.
- Implement object detection, YOLO, object tracking, motion, 3D reconstruction, and smart CCTV projects.
- Computer vision with OpenCV, Image Manipulation in OpenCV Operations, Image Segmentation, and ML and DL on computer vision
- Introduction to OCR, Tesseract Image OCR Implementation
- DNN - PyTorch, Linear Regression; PyTorch, Image Recognition; PyTorch, CNN; PyTorch, CIFAR 10 Classification; PyTorch, Transfer Learning - Pytorch

Topics Covered:

Computer Vision Basics with Python

Advanced Computer Vision with OpenCV 4, Keras, and TensorFlow 2

Computer Vision for OCR and Object Detection

PyTorch for Deep Learning and Computer Vision

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

UpSkill YourSelf
Learn • Earn • Grow

Natural Language Processing and Speech Recognition

This Natural Language Processing and Speech Recognition course will give you a detailed look at the science of applying Machine Learning algorithms to process large amounts of natural language data. This module focuses on natural language understanding, feature engineering, natural language generation, automated speech recognition, speech-to-text conversion, text-to-speech conversion, and voice assistance devices.

Key Learning Objectives

- Understand the concepts, tools, and techniques of NLP
- Learn about natural language understanding and natural language generation
- Perform text mining
- Extract intent and entities
- Understand the vector space model
- Apply vector, matrix, and algebra to data
- Learn about feature engineering
- Understand the syntactic and semantic structure of a sentence
- Hands-on experience with Python libraries
- How to apply Machine Learning and Deep Learning with NLP
- Understand speech and its types
- Perform text-to-speech conversion with automated speech recognition
- Work on voice assistance devices and build Alexa skills

Topics Covered:

Introduction to Natural Language Processing

Feature Engineering on Text Data

Natural Language Understanding Techniques

Natural Language Generation

Natural Language Processing Libraries

Natural Language Processing with Machine Learning and

Deep Learning

Introduction of Speech Recognition

Signal Processing and Speech Recognition Models

Speech-to-Text

Text-to-Speech

Voice Assistant Devices

Industry Master Class – Artificial Intelligence

Attend this online interactive industry masterclass to gain insights about advancements in Data Science, AI, and Machine Learning techniques.
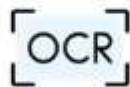
UpSkill YourSelf
Learn • Earn • Grow

325 W Washington
St Suite 2#3086
San Diego, CA 92103
United States

Tools Covered

python™

TensorFlow

K Keras

matplotlib

django

Flask

NLTK

learn

OpenCV

OCR

Project 1

Social Media

Using NLP and Machine Learning, build a model to identify inappropriate tweets that should be removed from the Twitter platform to prevent social hate and negativity.

Project 2

E-commerce

The data set provided contains movie reviews given by Amazon customers. Perform data analysis on the Amazon customer movie reviews data set and build a Machine Learning recommendation algorithm that provides ratings for each user.

Project 3

Automobile Manufacturing

Mercedes-Benz wants to reduce the time on its test bench to reduce the time it takes to get a car to the market. Build and optimise the Machine Learning algorithm to solve this problem.

Project 4

Retail

Predict accurate sales for Walmart stores considering the impact of promotional markdown events. Check the impact of macroeconomic factors like CPI and unemployment rate on sales.

Project 5

Comcast wants to improve customer experience by identifying and acting on problem areas that lower customer satisfaction and is seeking recommendations that can be implemented.

Project 6

E-commerce

Perform data analysis on Amazon consumer reviews of different products based on the data set provided and predict the sentiment or satisfaction based on feature or review text.

Project 7

Finance

The finance Industry is the biggest employer of Data Scientists. It faces constant attacks by fraudsters who try to trick the system. Correctly identifying fraudulent transactions is often a difficult task, but it is important that credit card companies can recognise fraudulent credit card transactions. You must try various techniques, such as supervised models with oversampling, unsupervised anomaly detection, and heuristics, to achieve maximum accuracy in fraud detection.

Project 8

Retail

Demand forecasting is one of the key tasks in operating and optimising the retail supply chain. To do so effectively, professionals must understand Data Science and ensemble techniques well. You are required to predict the daily sales for each store for one month.