

A dark, moody background image showing a profile of a person with glasses looking down at a glowing, futuristic cityscape. The city is filled with bright lights and geometric shapes, suggesting a high-tech environment. A large white chevron shape points downwards from the top left towards the bottom right, partially obscuring the city scene.

# AI ENGINEER MASTER'S PROGRAM

In collaboration with IBM

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# About the Program

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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.



# Key Features of the Program

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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

# About IBM and Simplilearn Collaboration

Headquartered in New York, IBM is a leading cognitive solution and cloud platform company, offering 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 10 inductees in the US Inventors Hall of Fame.

A partnership between IBM and Simplilearn introduces students to the best-in-class applied learning experience, making them experts in the field of 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.

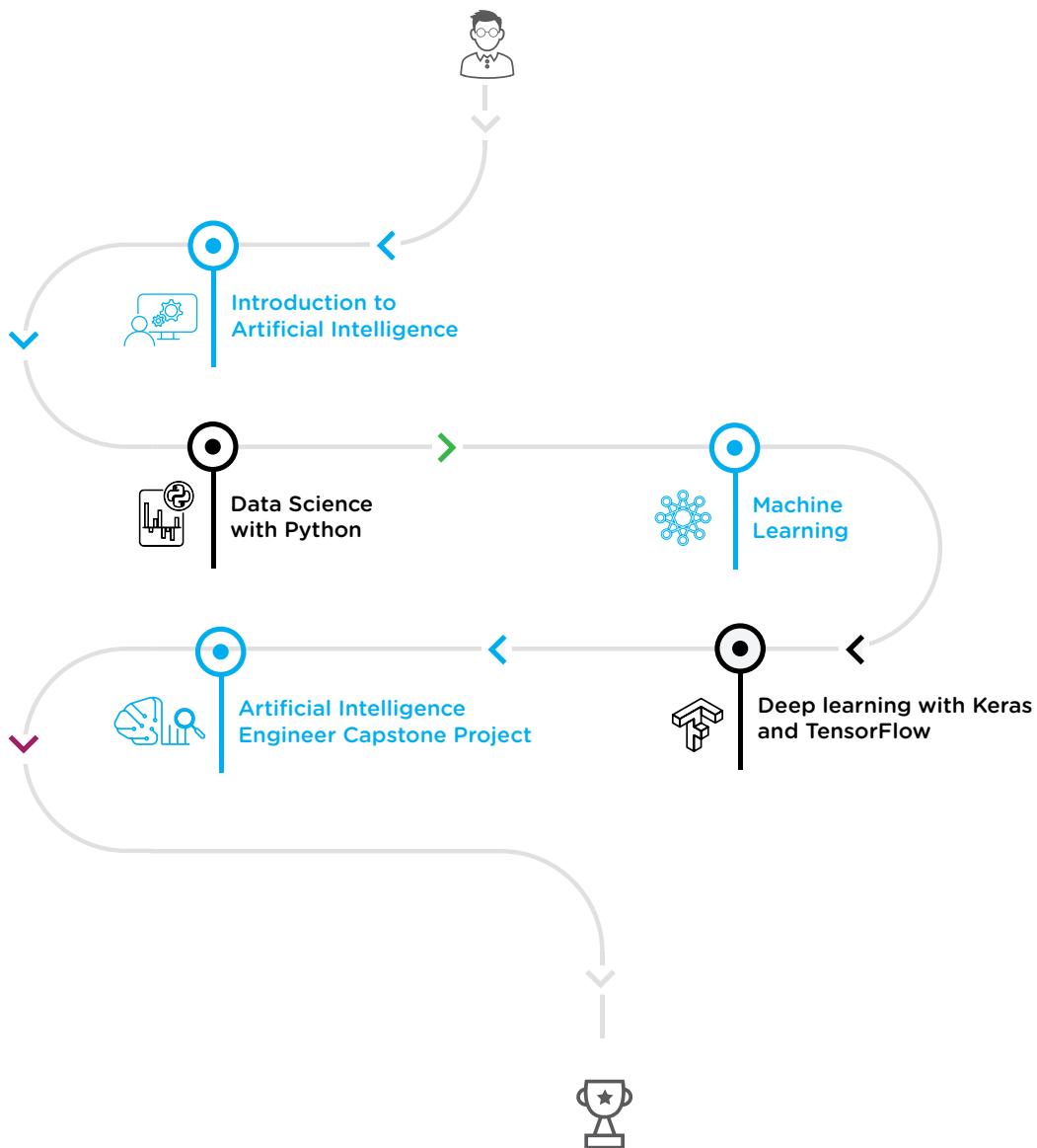


## About Simplilearn

Simplilearn is the world's #1 online bootcamp provider that enables learners through rigorous and highly specialized training. We focus on emerging technologies and processes that are transforming the digital world,

at a fraction of the cost and time as traditional approaches. Over one million professionals and 2000 corporate training organizations have harnessed our award-winning programs to achieve their career and business goals.

# Learning Path Visualization



## 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

# Program Outcomes

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Learn about the major applications of Artificial Intelligence across various use cases across various fields like customer service, financial services, healthcare, etc.



Master the skills and tools used by the most innovative Artificial Intelligence teams across the globe as you delve into specializations, and gain experience solving real-world challenges.



Implement classical Artificial Intelligence techniques such as search algorithms, neural networks, and tracking.



Design and build your own 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.



Gain the ability to apply Artificial Intelligence techniques for problem-solving and explain the limitations of current Artificial Intelligence techniques.



Understand the concepts of TensorFlow, its main functions, operations, and the execution pipeline.



Learn to deploy deep learning models on Docker, Kubernetes, and in serverless environments (cloud)



Understand and master the concepts and principles of Machine Learning, including its mathematical and heuristic aspects.



Understand the fundamentals of Natural Language Processing using the most popular library; Python's Natural Language Toolkit (NLTK).



Master and comprehend advanced topics such as convolutional neural networks, recurrent neural networks, training deep networks, and high-level interfaces.



## Who Should Enroll in this Program?

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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

Simplilearn's 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, 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, applications, and effects 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 effectively
- ✓ 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 visualization, web scraping, and natural language processing. Python is a required skill 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 visualization, 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 visualization
- ✓ 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

Simplilearn's 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 modeling to develop algorithms and prepare you for your role with advanced Machine Learning knowledge.

## Key Learning Objectives

- ✓ Master the concepts of supervised and unsupervised learning, recommendation engine, and time series modeling
- ✓ 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
- ✓ Acquire thorough knowledge of the statistical and heuristic aspects of Machine Learning
- ✓ 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
- ✓ Validate Machine Learning models and decode various accuracy metrics. Improve the final models using another set of optimization algorithms, which include Boosting & Bagging techniques
- ✓ 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

Simplilearn's 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

Simplilearn's 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 kind of transactions/reviews using NLP and related techniques to devise meaningful conclusions.

# Electives

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## 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

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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..

## Key Learning Objectives

Simplilearn's 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

# Advanced Deep Learning and Computer Vision

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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 Transform
- ✓ Implement Object Detection, YOLO, Object Tracking, Motion, 3D Reconstruction, and Smart CCTV Project
- ✓ 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

# Natural Language Processing and Speech Recognition

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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 on 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:**

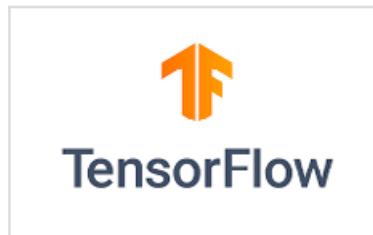
- ✓ Introduction to Natural Language Processing
- ✓ Feature Engineering on Text Data
- ✓ Natural Language Understanding Techniques
- ✓ Natural Language Generation
- ✓ Natural Language Processing Libraries
- ✓ Natural Language Processing with Machine Learning and
- ✓ Deep Learning
- ✓ Introduction of 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.

# Tools Covered

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# Projects

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## 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 of the users.



## 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 optimize 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**

### **Telecommunications**

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 product 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 attack 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 are able to recognize fraudulent credit card transactions. You are required to try various techniques such as supervised models with

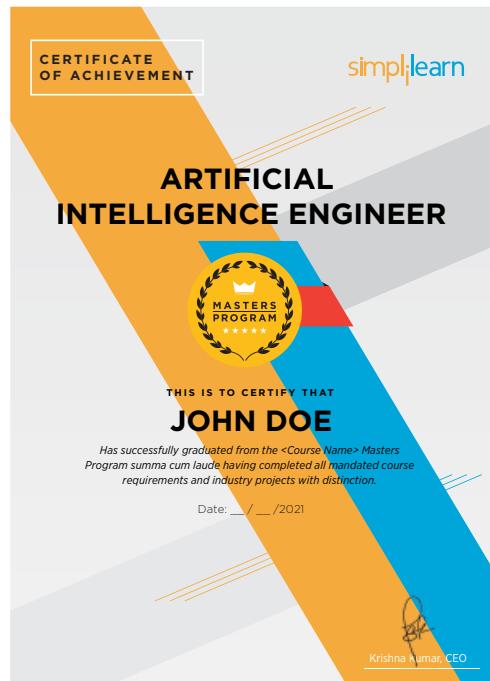
oversampling, unsupervised anomaly detection, and heuristics to achieve maximum accuracy in fraud detection.

## **Project 8**

### **Retail**

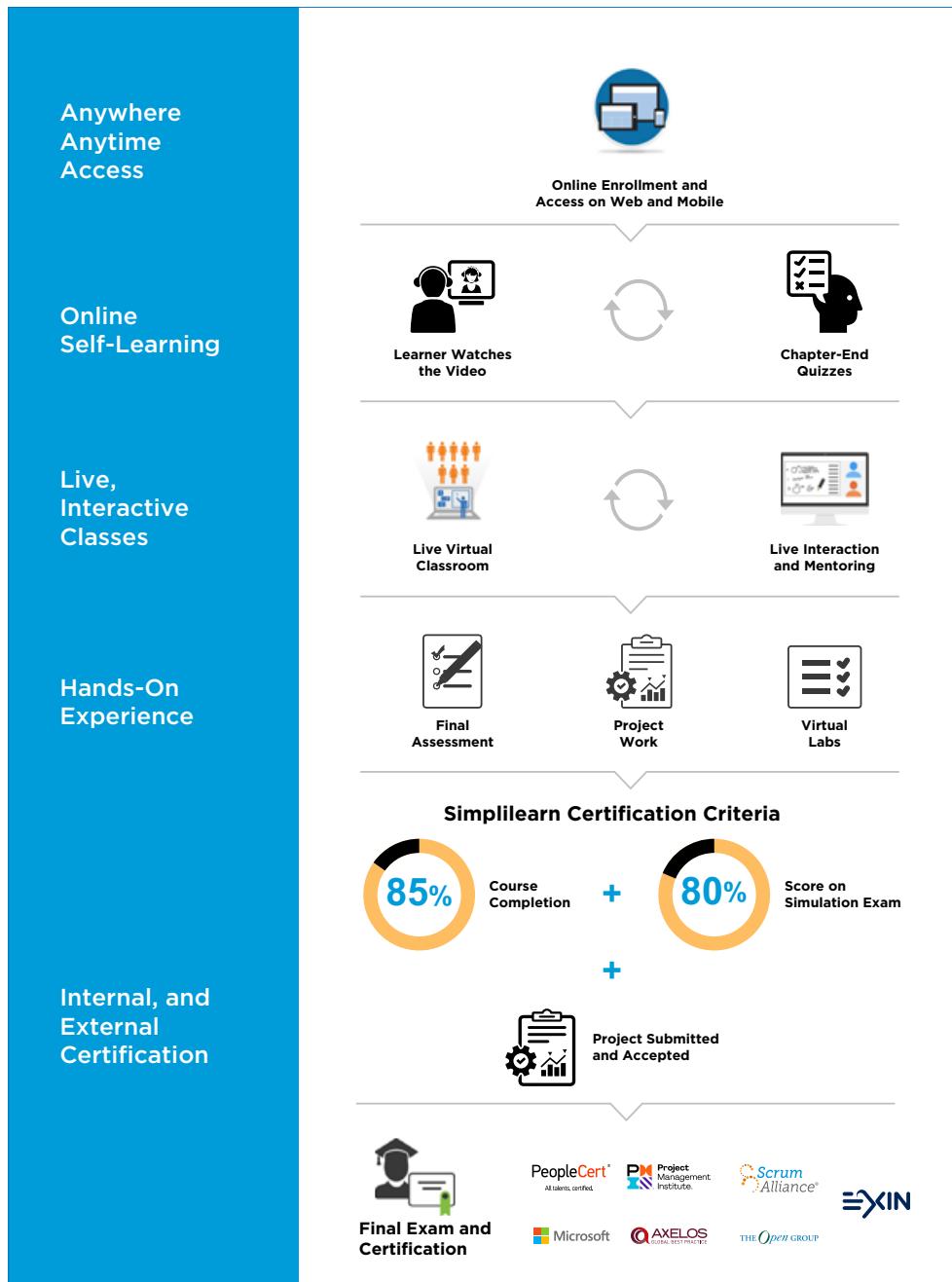
Demand forecasting is one of the key tasks in operating and optimizing the retail supply chain. To do so effectively, professionals must have a good understanding of Data Science and ensemble techniques. You are required to predict the daily sales for each store for one month.

# Certificate



Upon completion of this Master's Program, you will receive the certificates from IBM and Simplilearn for the AI courses in the learning path. These certificates will testify to your skills as an expert in artificial intelligence. Upon program completion, you will also receive an industry recognized Master's Certificate from Simplilearn.

# Classroom-Level Immersion: Delivered Digitally



# Customer Reviews

## Vishwanath Ragha

The awesome learning experience with Simplilearn. I am in the Artificial Intelligence Engineer Master's Program. So far, I have completed up to the Data Science with Python course. All the courses are well structured with self-learning, live classes, and assessment. The trainers are good, connect to students, and answer questions. Happy learning.



## Janani Varun

I would give a 5-star rating for the Simplilearn course I took. It helps me understand the content easily through online self-learning videos, and trainers assist us with their enriched knowledge, as well.



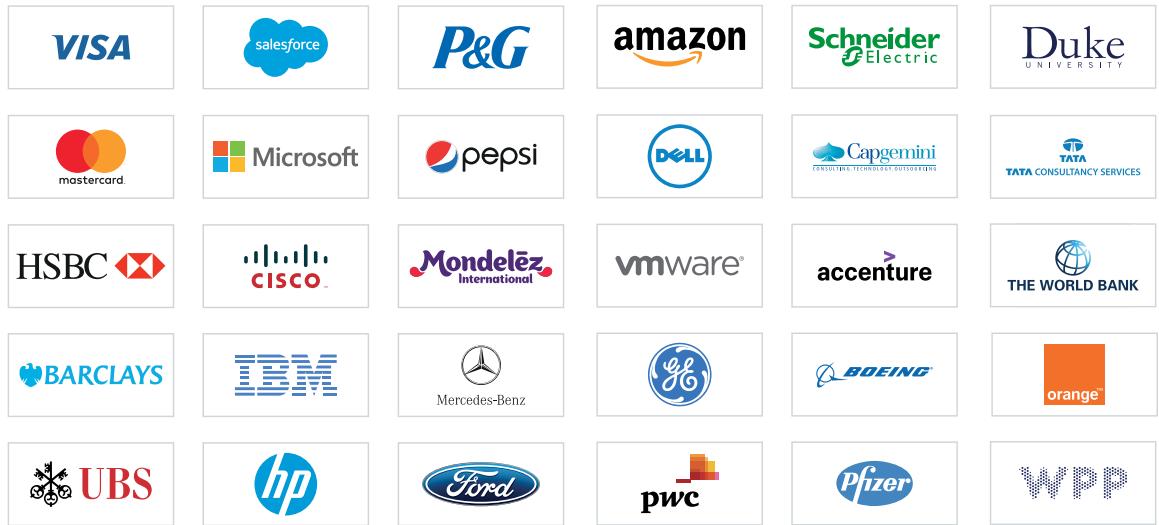
## Leena Jayamohan

I took the AI Master's program, which consisted of multiple classes. Overall the teachers knew the subject and covered what was promised. The industry-related projects were excellent, and it helped put into practice what we learned in the class. I would recommend these classes to anyone planning to enter the Data Analytics field.



# Corporate Training

Top clients we work with:



## Features of Corporate Training:

-  Tailored learning solutions
-  Flexible pricing options
-  Enterprise-grade learning management system (LMS)
-  Enterprise dashboards for individuals and teams
-  24X7 learner assistance and support



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