Artificial Intelligence Engineer

simplilearn

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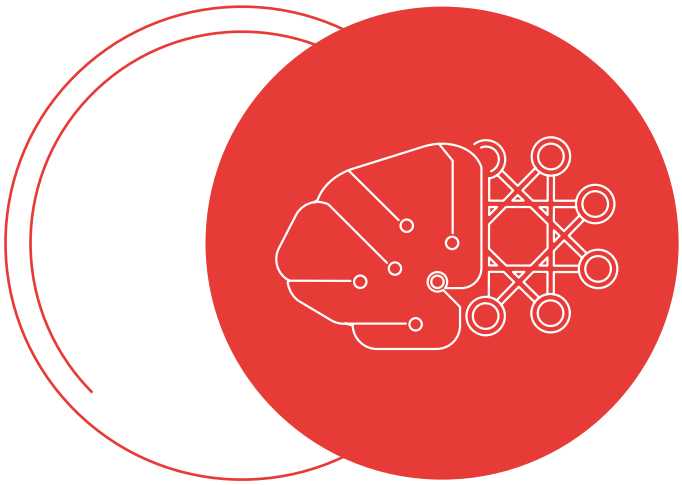


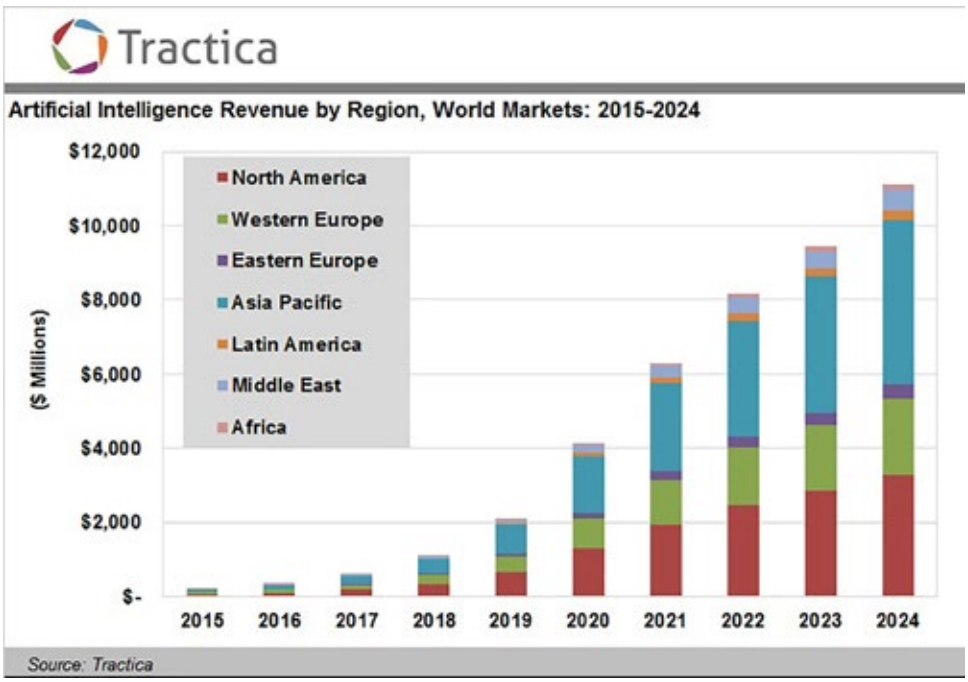
About the Course

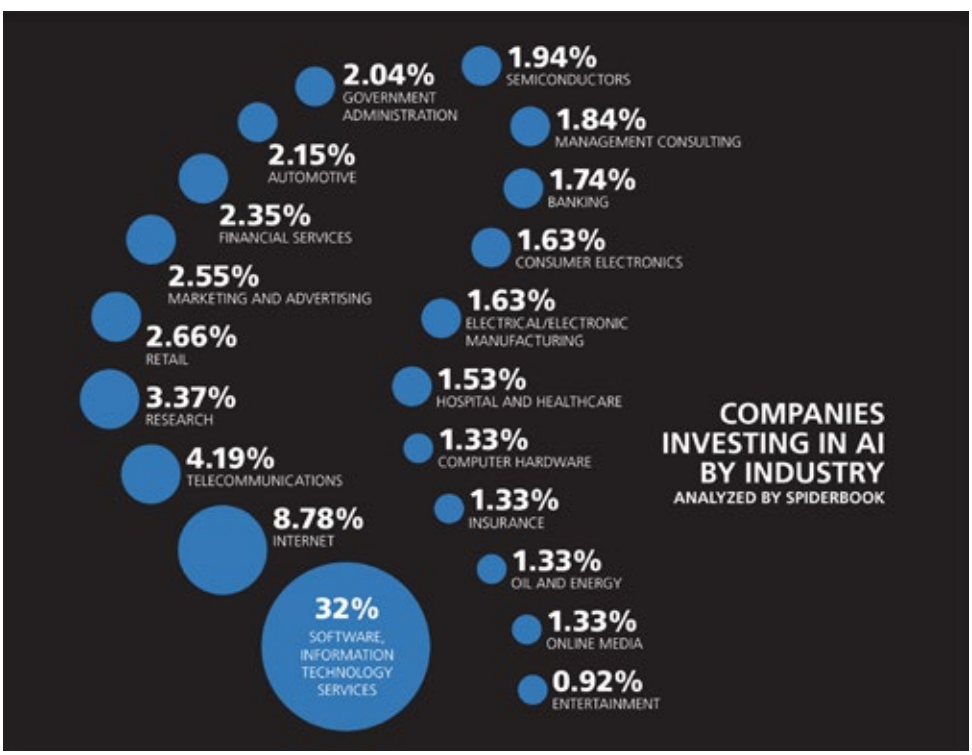
Artificial intelligence will impact all segments of daily life by 2025 with huge implications for a range of industries such as transport and logistics, healthcare, home maintenance and customer service!

Stay in demand by taking Simplilearn's Artificial Intelligence Engineer course that will prepare you for the role of Artificial Intelligence Engineer by making you an expert in Supervised Learning, Unsupervised Learning, Reinforcement Learning, Support Vector Machines, Deep Learning, TensorFlow, Neural Networks, Convolutional Neural Networks, Recurrent Neural Networks through several industry-relevant projects. The need for AI specialists exists in just about every field as companies seek to give computers the ability to think, learn, and adapt!

Artificial Intelligence Market

According to a new report from Tractica, the market for enterprise AI systems will increase from $202.5 million in 2015 to $11.1 billion by 2024





How are companies using Artificial Intelligence

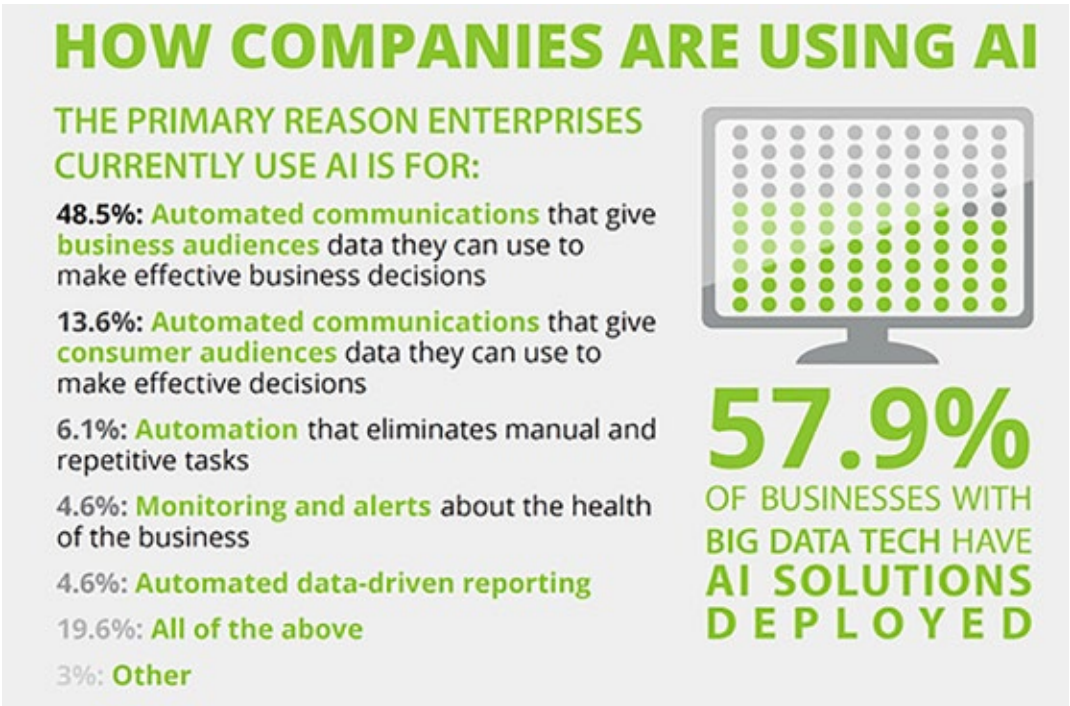
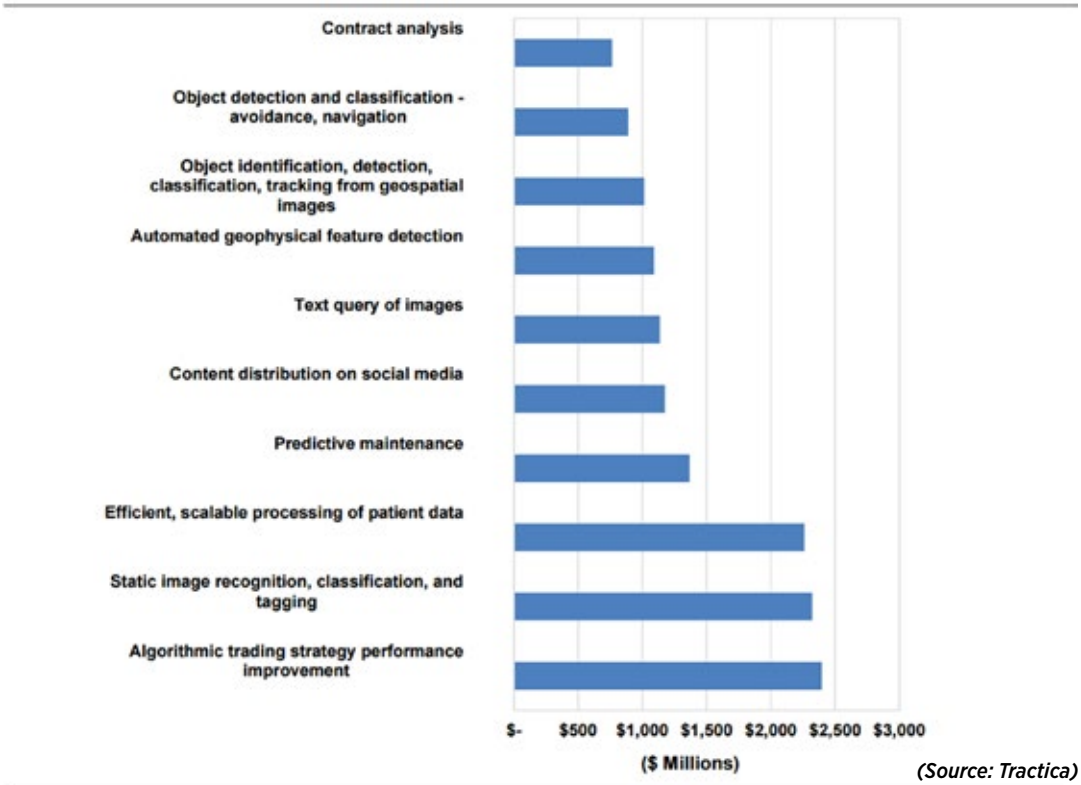
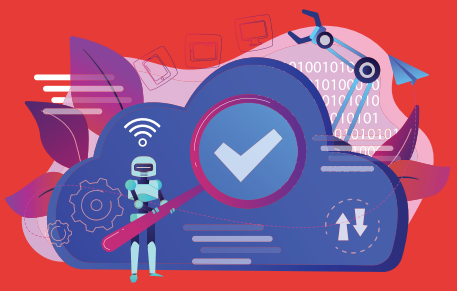


Chart 1.2 *Artificial Intelligence Revenue, Top 10 Use Cases, World Markets: 2025*



(Source: Tractica)

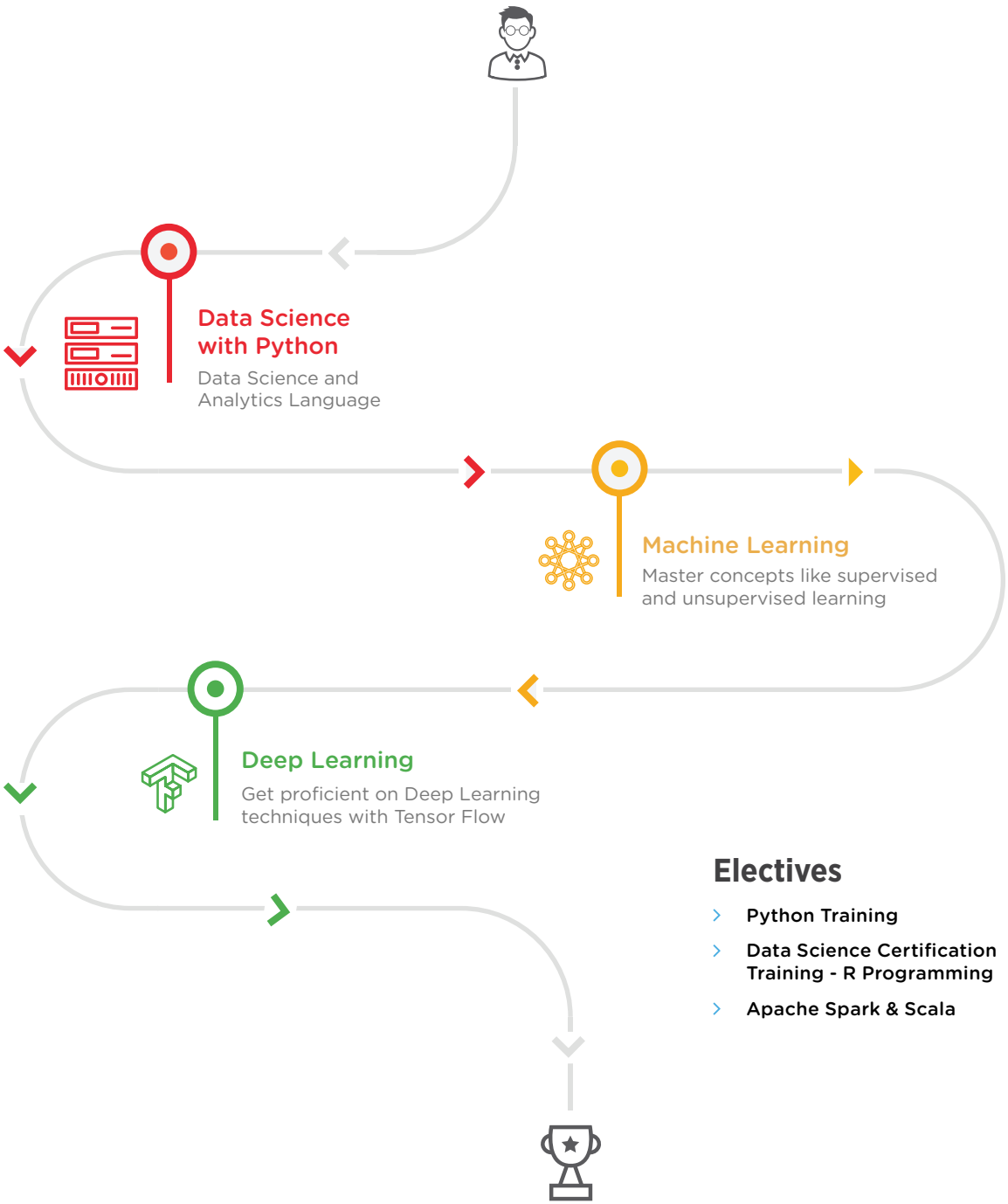
Simplilearn's Artificial Intelligence Engineer course that will prepare you for the role of Artificial Intelligence Engineer by making you an expert in Supervised Learning.



Key Features

- 15+ In-Demand Skills & Tools
- 10+ Real-Life Projects
- Gain hands-on experience
- Earn Masters Certification on course completion
- Hands on project execution on CloudLabs
- An industry recognized Simplilearn Masters Certificate on completion
- GTA Technical, Project, Programming support by industry experts

Learning Path

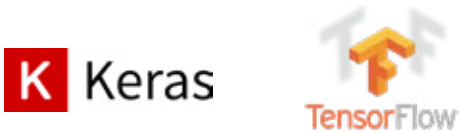


Electives

- Python Training
- Data Science Certification Training - R Programming
- Apache Spark & Scala

Artificial Intelligence

Tools Covered:

Advanced Analytics Tools	
Artificial Intelligence Tools	
Programming Tools	

Artificial Intelligence Engineer Outcomes

- Learn about major applications of Artificial Intelligence across various use cases in various fields like customer service, financial services, healthcare, etc
- Implement classical Artificial Intelligence techniques such as search algorithms, neural networks, tracking
- Ability to apply Artificial Intelligence techniques for problem-solving and explain the limitations of current Artificial Intelligence techniques
- Master skills and tools used by the most innovative AI teams across the globe as you delve into specializations, and gain experience solving real-world challenges
- Formalise a given problem in the language/framework of different AI methods such as a search problem, as a constraint satisfaction problem, and as a planning problem

Who can enroll for the program ?

With the demand for AI in a broad range of industries such as banking and finance, manufacturing, transport and logistics, healthcare, home maintenance and customer service, the AI 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

Developers

Analytics Professionals

Information Architects

Experienced Professionals who seek more insight

Analytics Managers

Graduates looking to build a career in this field

STEP 1 2 3

Data Science with Python

With this Python for Data Science Course, you'll learn the essential concepts of Python programming and become an expert in data analytics, machine learning, data visualization, web scraping and natural language processing.

Key Learning Objectives

- Gain an in-depth understanding of data science process, data wrangling, data exploration, data visualization, hypothesis building, and testing.
- You will also learn the basics of statistics.
- Understand the essential concepts of Python programming like data types, tuples, lists, dicts, basic operators, and functions.
- Perform high-level mathematical, scientific and technical computing using NumPy, SciPy packages
- Perform data analysis and manipulation using data structures and tools provided in Pandas package
- Gain expertise in machine learning using the Scikit-Learn package

Course curriculum

- Data Science Overview - Get introduced to Data Science and its sectors, and components of Python
- Data Analytics Overview - Know about Exploratory Data Analysis(EDA) techniques and data types for plotting
- Statistical Analysis and Business Applications - Learn about statistical and non-statistical analysis, categories and processes of statistics, data distribution and dispersion, histogram, and testing
- Python Environment Setup and Essentials - Learn how to install Anaconda Python Distribution and how to work with Python Data Types
- Mathematical Computing with Python - Comprehend mathematical functions of Numpy
- Scientific Computing with Python - Acquire knowledge on SciPy sub package
- Data Manipulation with Pandas - Understand Pandas SQL operation
- Machine Learning with Scikit–Learn - Get a knowhow on Scikit, Supervised Learning Model Considerations, Supervised Learning Models , Unsupervised Learning Models, Pipeline
- Natural Language Processing with Scikit - Gain overview, applications, and libraries of NLP
- Data Visualization in Python - Introduction to Data Visualization, Line Properties, Types of Plots are covered in this lesson
- Web Scraping with BeautifulSoup - Web Scraping and Parsing, Navigating options, Modifying the Tree are covered in this lesson
- Python integration with Hadoop MapReduce and Spark - Understand Why Big Data Solutions are Provided for Python, Hadoop Core Components, Python Integration with Spark using PySpark

Projects Covered:

The course includes four real-world, industry-based projects. Successful evaluation of one of the following projects is a part of the certification eligibility criteria:

Project 1: NYC 311 Service Request Analysis

Telecommunication: Perform a service request data analysis of New York City 311 calls. You will focus on data wrangling techniques to understand patterns in the data and visualize the major complaint types.

Project 2: MovieLens Dataset Analysis

Engineering: The GroupLens Research Project is a research group in the Department of Computer Science and Engineering at the University of Minnesota. The researchers of this group are involved in several research projects in the fields of information filtering, collaborative filtering and recommender systems. Here, we ask you to perform an analysis using the Exploratory Data Analysis technique for user datasets.

Project 3: Stock Market Data Analysis

Stock Market: As a part of this project, you will import data using Yahoo data reader from the following companies: Yahoo, Apple, Amazon, Microsoft and Google. You will perform fundamental analytics, including plotting, closing price, plotting stock trade by volume, performing daily return analysis, and using pair plot to show the correlation between all of the stocks.

Project 4: Titanic Dataset Analysis

Hazard: On April 15, 1912, the Titanic sank after colliding with an iceberg, killing 1502 out of 2224 passengers and crew. This tragedy shocked the world and led to better safety regulations for ships. Here, we ask you to perform an analysis using the exploratory data analysis technique, in particular applying machine learning tools to predict which passengers survived the tragedy.

STEP 1 2 3

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, hands-on modeling to develop algorithms and prepare you for the role of Machine Learning Engineer.

Key Learning Objectives

- Master the concepts of supervised and unsupervised learning
- Gain practical mastery over principles, algorithms, and applications of machine learning through a hands-on approach which includes working on 28 projects and one capstone project.
- Acquire thorough knowledge of the mathematical and heuristic aspects of machine learning.
- Understand the concepts and operation of support vector machines, kernel SVM, naive bayes, decision tree classifier, random forest classifier, logistic regression, K-nearest neighbors, K-means clustering and more.
- Comprehend the theoretical concepts and how they relate to the practical aspects of machine learning.
- Be able to model a wide variety of robust machine learning algorithms including deep learning, clustering, and recommendation systems

Course curriculum

- Introduction to Artificial Intelligence and Machine Learning: Get introduced to Machine Learning concepts, logarithms, and its applications
- Techniques of Machine Learning: Learn about supervised, unsupervised, semi-supervised, and reinforced machine learning techniques
- Data Preprocessing: Comprehend the meaning, process, and importance of data preparation, feature engineering and scaling, datasets, dimensionality reduction, and many more
- Math Refresher: Overview of Linear Algebra, Eigenvalues, Eigenvectors, and Eigen-decomposition, Calculus, Probability and Statistics
- Regression: Know Linear Regression: Equations and Algorithms in this lesson
- Classification: Gain knowledge on classification types such as SVM, KNN, Naive Bayes, decision tree, random forest, logistic regression, k-nearest neighbours, and support vector machines
- Unsupervised learning - Clustering: Clustering definition, clustering algorithms, prototype-based clustering, K-means clustering example are covered in this lesson
- Introduction to Deep Learning: Understand the meaning and importance of deep learning, Artificial Neural networks, and TensorFlow

Projects Covered:

This course consists of one primary capstone project and 25+ ancillary exercises based on 17 machine learning algorithms.

Capstone Project Details:

Project Name: Predicting house prices in California

Description: The project involves building a model that predicts median house values in Californian districts.You will be given metrics such as population, median income, median housing price and so on for each block group in California.Block groups are the smallest geographical unit for which the US Census Bureau publishes sample data (a lock group typically has a population of 600 to 3,000 people).The model you build should learn from this data and be able to predict the median housing price in any district.

Concept Covered: Classification

Case Study: Predict if the consumers will buy houses, given their age and salary. Use the information provided in the dataset

Project: Typically, the value of nearest_neighbors for testing class in KNN is 5. Modify the code to change the value of nearest_neighbours to 2 and 20, and note the observations.

Case Study: Classify IRIS dataset using SVM, and demonstrate how Kernel SVMs can help classify non-linear data.

Project: Modify the kernel trick from RBF to linear to see the type of classifier that is produced for the XOR data in this program. Interpret the data.

Project: For the Iris dataset, add a new code at the end of this program to produce classification for RBF kernel trick with gamma = 1.0. Explain the output.

Case Study: Classify IRIS flower dataset using Decision Trees. Use the information provided

Project: Run decision tree on the IRIS dataset with max depths of 3 and 4, and show the tree output.

Project: Predict and print class probability for Iris flower instance with petal_len 1 cm and petal_width 0.5 cm.

In addition to the above mentioned projects, rest of the projects based on 17 machine learning algorithms will be covered as part of the training.

STEP 1 2 3

Deep Learning with TensorFlow

This Deep Learning course will transform you into an expert in deep learning techniques using TensorFlow. With our deep learning course, you'll master deep learning and TensorFlow concepts, learn to implement algorithms, build artificial neural networks and traverse layers of data abstraction to understand the power of data and prepare you for your new role as deep learning scientist.

Key Learning Objectives

- Understand the concepts of TensorFlow, its main functions, operations, and the execution pipeline
- Implement deep learning algorithms, understand neural networks, and traverse the layers of data abstraction which will empower you to understand data like never before
- Master and comprehend advanced topics such as convolutional neural networks, recurrent neural networks, training deep networks, and high-level interfaces
- Build deep learning models in TensorFlow and interpret the results
- Understand the language and fundamental concepts of artificial neural networks
- Troubleshoot and improve deep learning models
- Build your own deep learning project
- Differentiate between machine learning, deep learning and artificial intelligence

Course curriculum

- Introduction to TensorFlow: Intro to tensorflow, computational graph, key highlights, Creating a graph, regression example and modularity
- Perceptrons: Understanding the concept of perceptrons and XOR gate
- Activation Functions: Knowledge on Sigmoid, ReLU, Hyperbolic Fns, and Softmax
- Artificial Neural Networks: Introduction to Perceptron rule and Gradient Descent rule
- Gradient Descent and Backpropagation: Understanding Gradient Descent, Stochastic Gradient Descent, back propagation and some problems in ANN
- Optimization and Regularization: Concepts of Overfitting and capacity, Cross validation, Features selection, regularization and hyperparameters
- Intro to Convolutional Neural Networks: Intro to CNNs kernel filter, principles, behind CNNs, Multiple filters and CNN application
- Intro to Recurrent Neural Networks: Intro to RNNs, Unfolded RNNs, LSTM, and RNN application
- Deep Learning applications: How to conduct image processing, Natural Language Processing, Speech Recognition, and Video Analytics

Projects Covered:

Project Name: Pet Classification Model Using CNN

Description: Build a CNN model that classifies the given pet images correctly into dog and cat images. The project scope document specifies the requirements for the project "Pet Classification Model Using CNN." Apart from specifying the functional and nonfunctional requirements for the project, it also serves as an input for project scoping.

Elective Course

Python Basics:

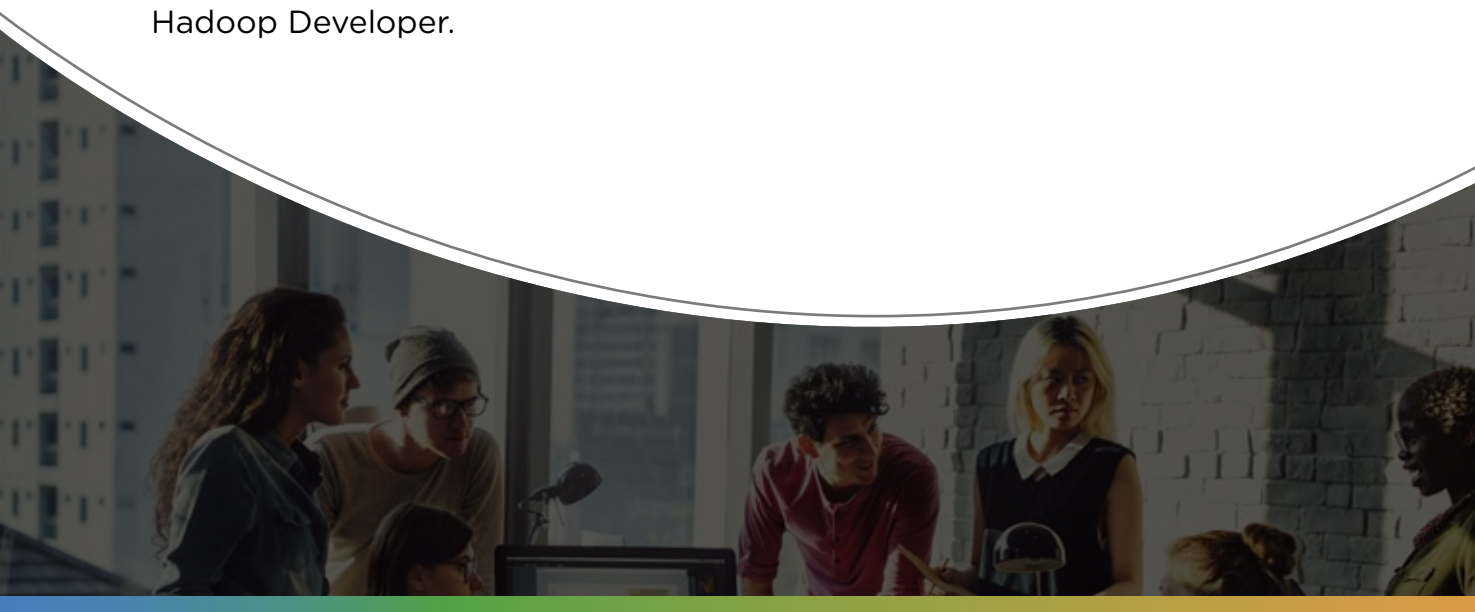
This course is ideal for you to understand the basics of Python Programming Language.

Data Science with R:

The next step to a data scientist is learning R - the upcoming and most in-demand open source technology. R is is an extremely powerful data science and analytics language which has a steep learning curve and a very vibrant community. This is why it is quickly becoming the technology of choice for organizations who are adopting the power of analytics for competitive advantage.

Apache Spark and Scala:

This Apache Spark and Scala certification training is designed to advance your expertise working with the Big Data Hadoop Ecosystem. You will master essential skills of the Apache Spark open source framework and the Scala programming language, including Spark Streaming, Spark SQL, machine learning programming, GraphX programming and Shell Scripting Spark. This Scala Certification course will give you vital skill-sets and a competitive advantage for an exciting career as a Hadoop Developer.



Advisory board member

Mike Tamir

No. 1 AI & Machine Learning Influencer, Head of Data Science - Uber ATG

Named by Onalytica as the No.1 influencer in AI & Machine Learning space, Mike serves as Head of Data Science for Uber ATG self-driving engineering team and as UC Berkeley data science faculty.

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