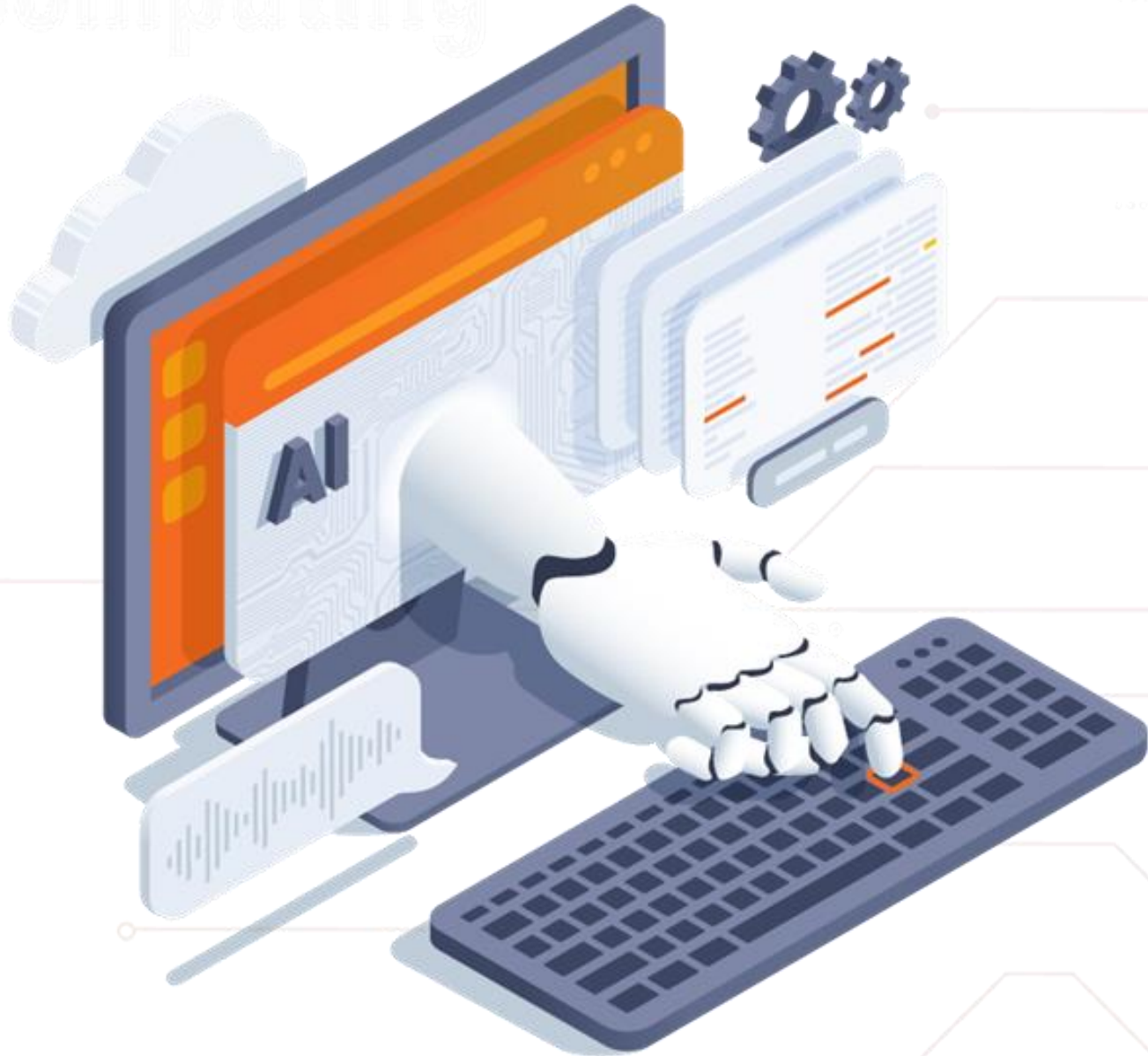


Cloud
Computing

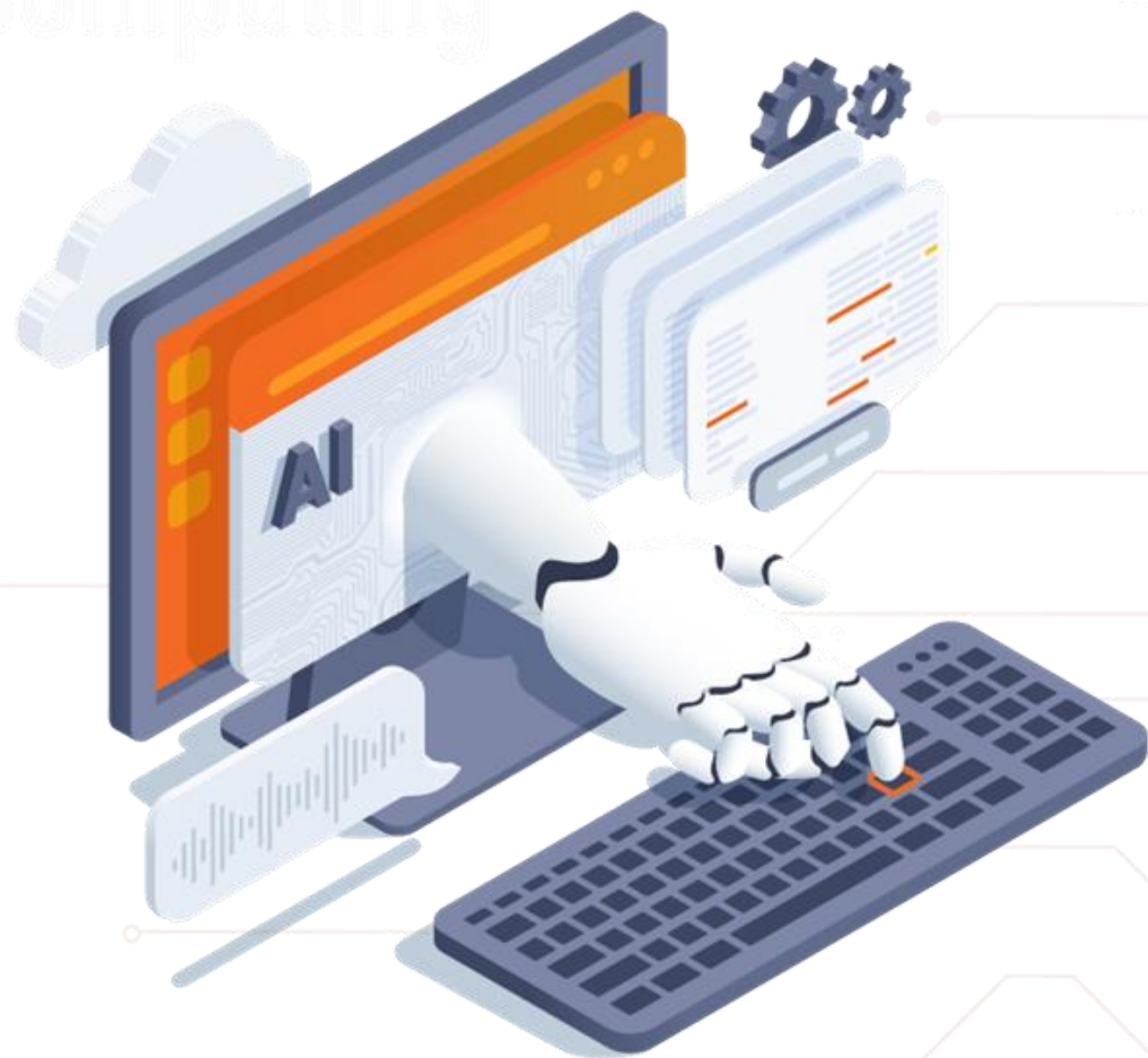


Caltech

**Center for Technology &
Management Education**

Machine Learning

DATA AND
ARTIFICIAL INTELLIGENCE
Computing



Caltech

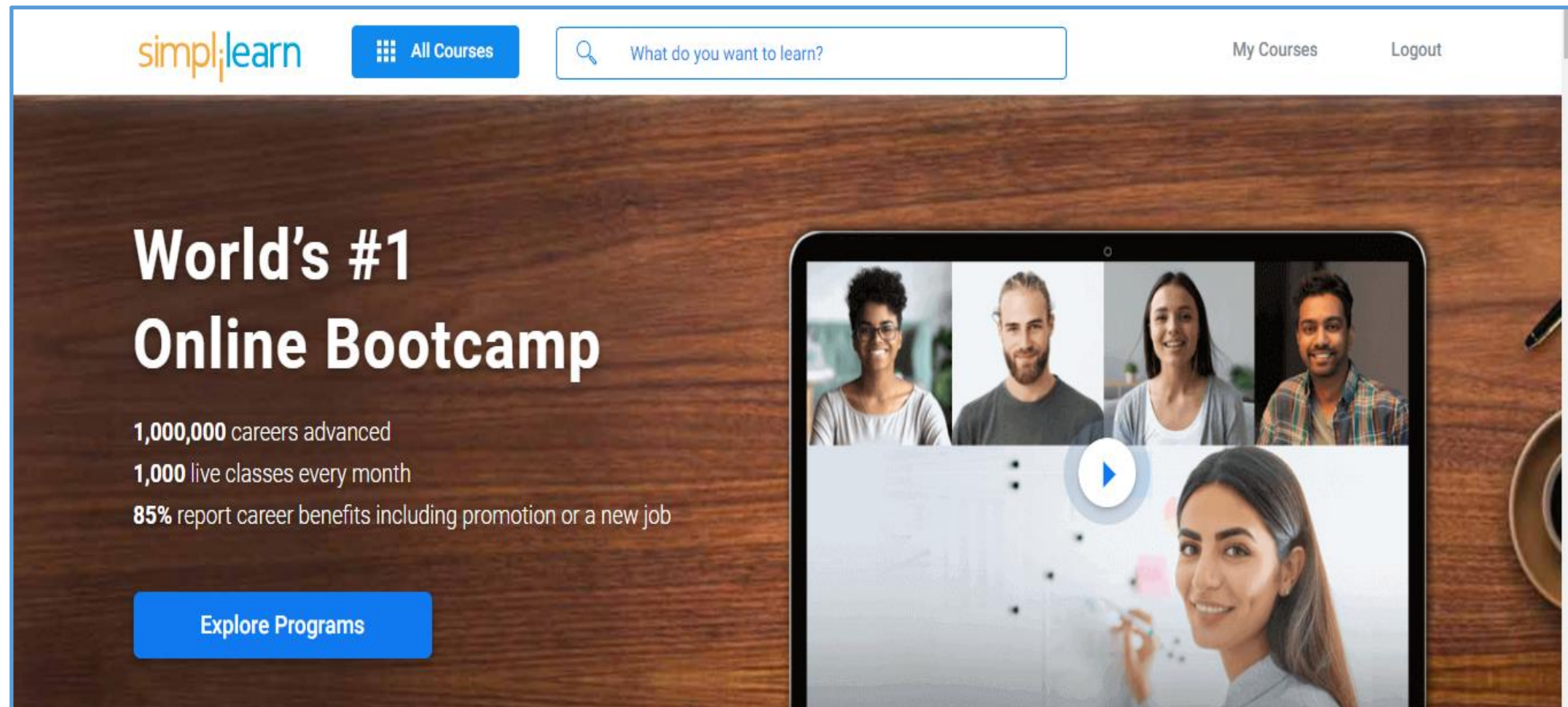
**Center for Technology &
Management Education**

Program Introduction

About Simplilearn

Simplilearn

Simplilearn has focused on its digital economy skills for over a decade. It is now the world's most popular online bootcamp.

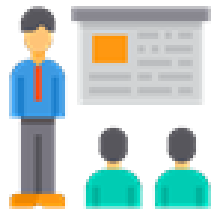


Simplilearn

Simplilearn
provides:



Live virtual classes (LVCs)



Self-paced
learning content



Interactive labs

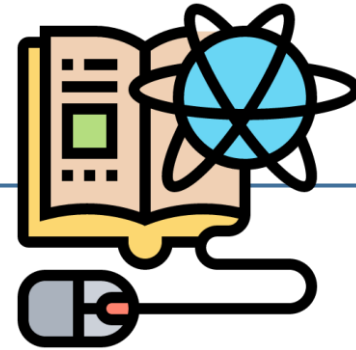


Real-time,
scenario-based projects



Introduction to Machine Learning

What Is Applied Machine Learning?



- The implementation of machine learning to a particular data-related problem is known as machine learning.
- It uses techniques and theories from mathematics, statistics, computer science, domain knowledge, and information science to build the model.
- Machine learning can be used to solve any problem with probabilistic elements, but it is particularly helpful for manipulating and interpreting large amounts of statistically produced data.

Benefits of Machine Learning

Various uses:

Its usage can be seen in a variety of fields, including healthcare, banking, as well as science and technology.

Handles data:

It allows users to handle a large amount of data.



Automation:

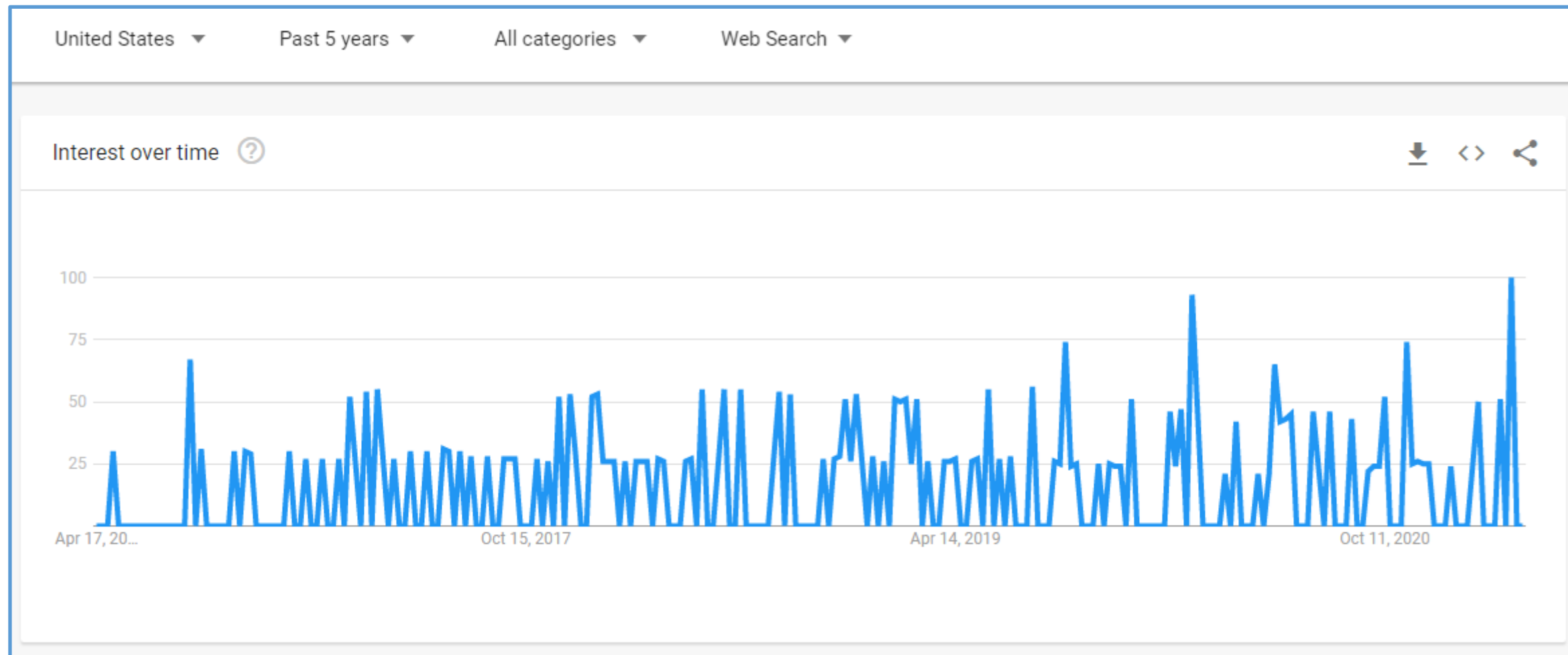
It means providing machines with the ability to learn, allowing them to make decisions and self-improve algorithms.

Handles different types of data:

It is capable of managing and processing any form of data that normal systems can't.

Demand for Machine Learning

The demand for machine learning is rapidly increasing. Machine learning is expected to continue to grow significantly in the future.



Search trend for applied machine learning in the last five years

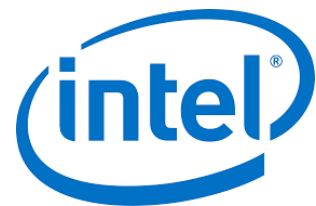
Source: <https://trends.google.com/trends/?geo=US>

Companies Hiring Applied Machine Learning Engineers

There are many companies around the world that hire applied machine learning engineers.
These include:

 **accenture**

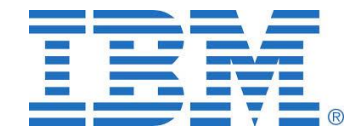
 **amazon**



 **PayPal**

 **Microsoft**



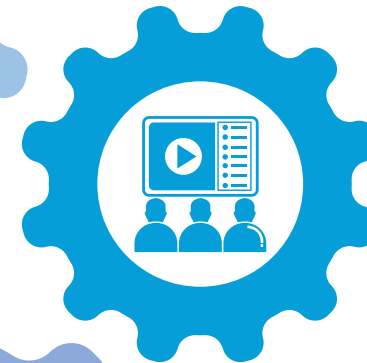
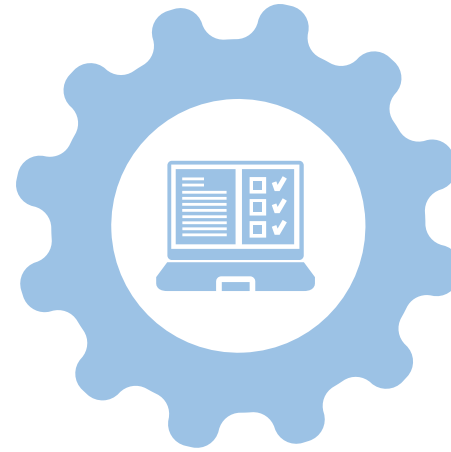
 **IBM**

Simplilearn Program Features

Program Features

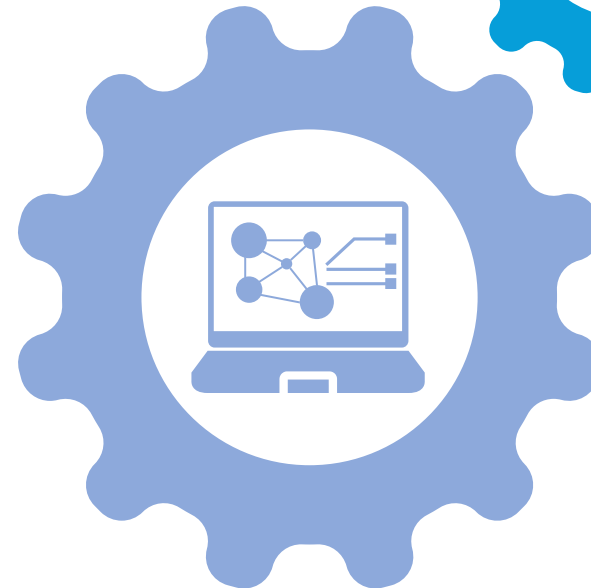
The blended learning program is a combination of:

Self-paced learning
content



Live virtual classes
(LVCs)

Hands-on exercises



Program Features

The program contains different features listed below:



Theoretical concepts



Case studies



Integrated labs



Projects

Program Features

Class sizes are limited to foster maximum interaction.



Learning Path

Target Audience

Anyone who aspires to be a data scientist must have an understanding of programming in any one of the popular languages. The target audience includes:



- Programmers
- Software developers
- Analysts
- Learning enthusiasts

Applied Machine Learning Expert

For instance, if an associate programmer who recently graduated as an engineer decides to become an applied machine learning expert, they can do so after completing this program.



Associate Programmer



Applied Machine Learning Expert



NumPy

matplotlib

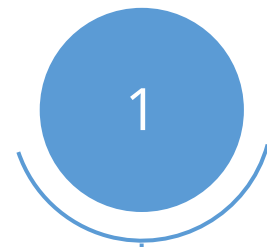


TensorFlow

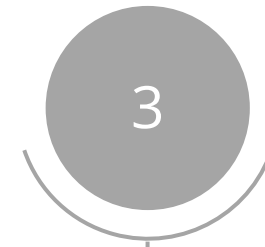


Seaborn

Course Outline



Introduction to Machine Learning



Decision Trees and Random Forest

Course Introduction



**Supervised Learning:
Regression and Classification**



Course Outline



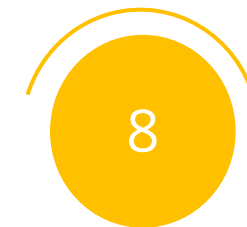
Unsupervised Learning

Time Series Modeling

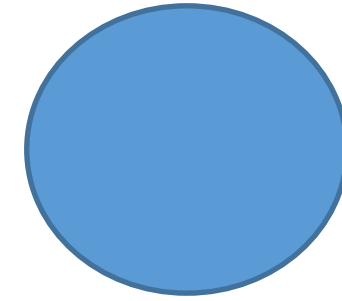


Ensemble Learning

Recommender Systems



Learning Path: Lesson 1



Instructor-Led Classes

**Self-Paced Learning
Content**

Course Introduction

- Lessons and components
- Program features and course outline
- Walk through of Jupyter lab demo

Learning Path: Lesson 2



Instructor-Led Classes

**Self-Paced Learning
Content**

Introduction to Machine Learning

- Emergence of artificial intelligence
- Relationship between AI, ML, and data science
- Machine learning approach

Learning Path: Lesson 3



Instructor-Led Classes

**Self-Paced Learning
Content**

Supervised Learning: Regression and Classification

- Supervised learning: process flow
- Types of regression algorithms
- Understanding the Maximum Likelihood Estimation
- Naive Baye's theorem
- Model evaluating using accuracy score and confusion matrix

Learning Path: Lesson 4



Instructor-Led Classes

**Self-Paced Learning
Content**

Decision Trees and Random Forest

- Decision tree
- Overfitting and pruning
- Random forest
- Bagging and bootstrapping

Learning Path: Lesson 5



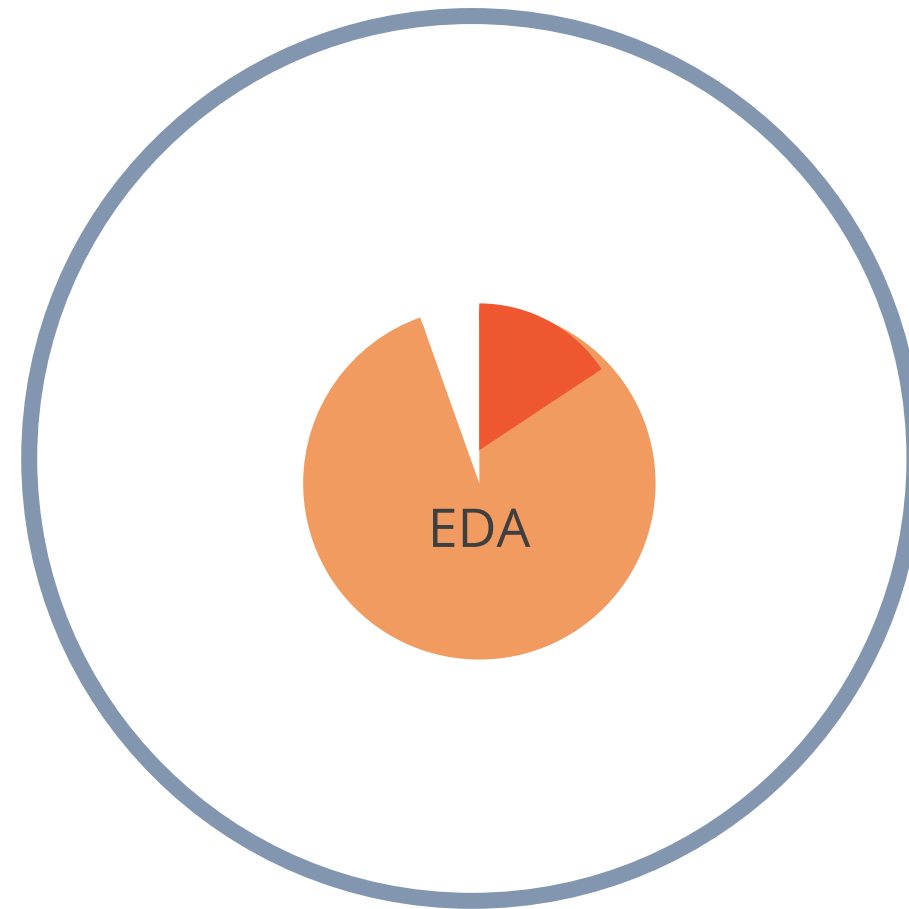
Instructor-Led Classes

**Self-Paced Learning
Content**

Unsupervised Learning

- Unsupervised learning - process flow
- Clustering
- K-means clustering
- Elbow method
- Hierarchical clustering

Learning Path: Lesson 6



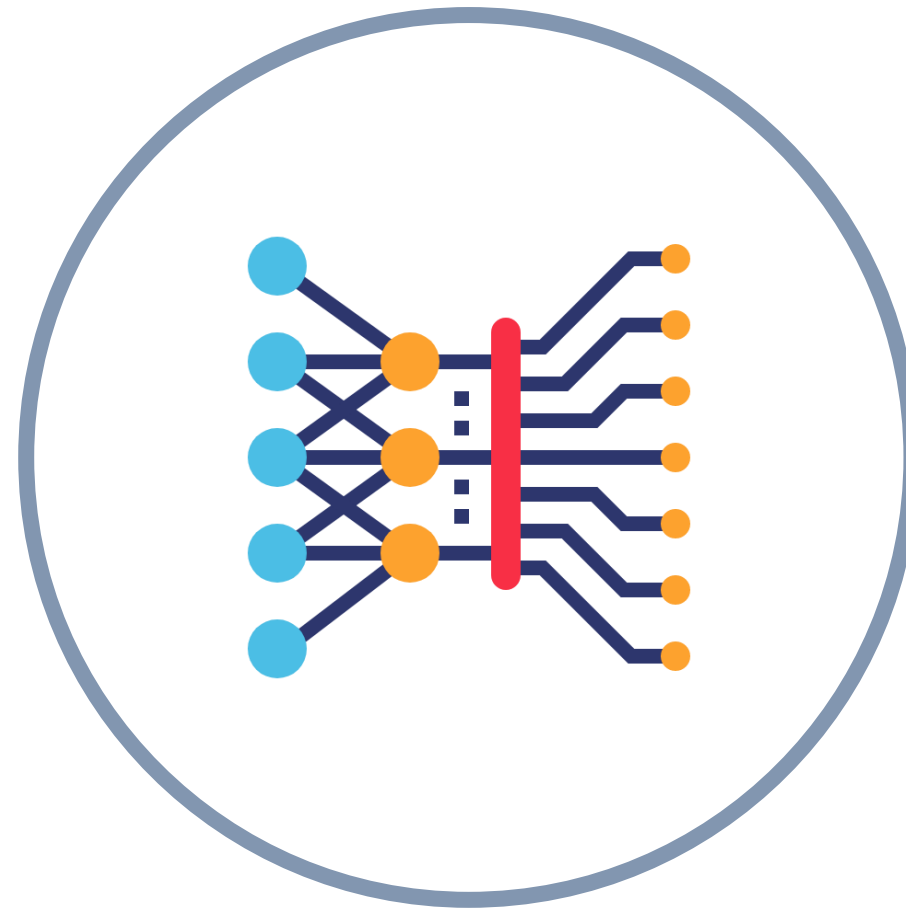
Time Series Modeling

- What is time series?
- Time plot
- Important terms related to time series data
- Stationarity check

Instructor-Led Classes

**Self-Paced Learning
Content**

Learning Path: Lesson 7



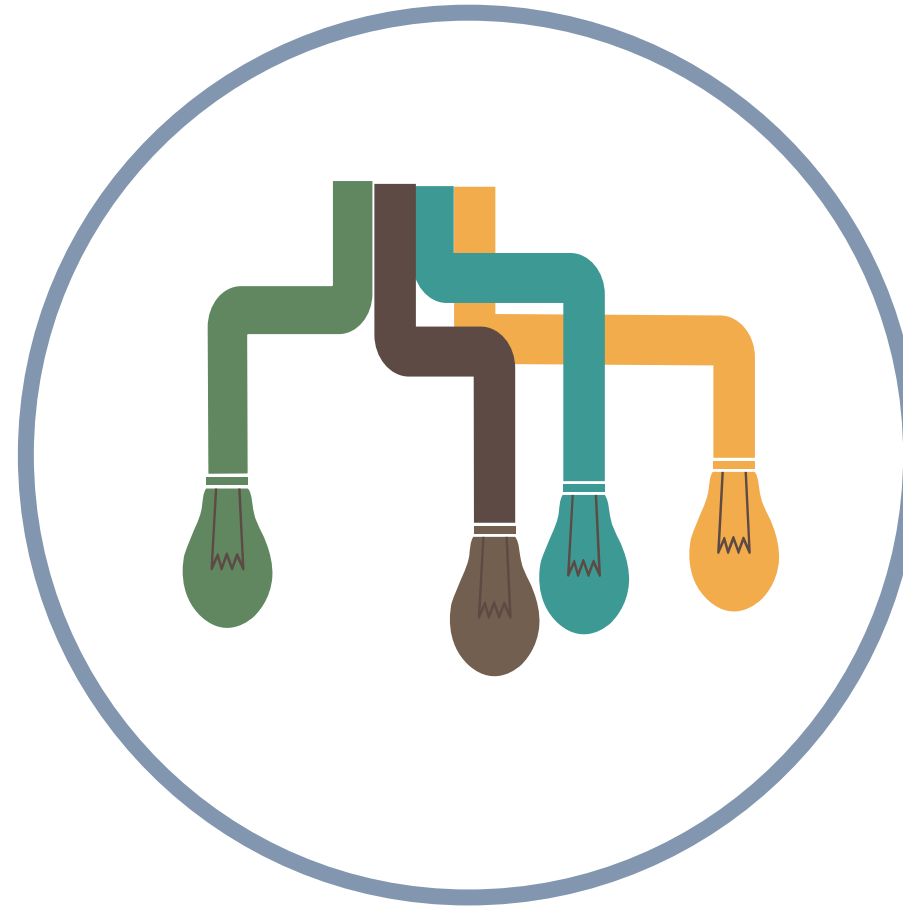
Ensemble Learning

- What is ensemble learning?
- Working of ensemble learning
- Ensemble learning methods
- Types of ensemble methods

Instructor-Led Classes

**Self-Paced Learning
Content**

Learning Path: Lesson 8



Instructor-Led Classes



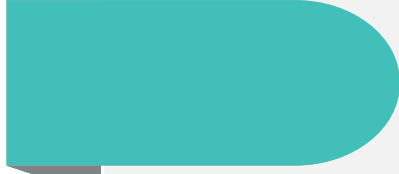
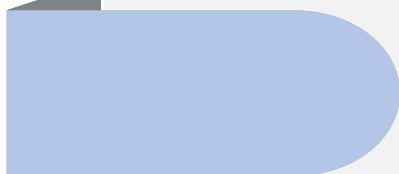
**Self-Paced Learning
Content**

Recommender Systems

- What is a recommender system?
- Popularity based recommender system
- Building an end-to-end recommender system
- Using the surprise module

Program Components

Program Components

-  **E-books:** All lessons are available as PDF files to download and use as quick reference guides
-  **Assisted practices:** To assist you in developing abilities that will make you an asset to any business
-  **Assessments:** There are over 100 questions to assess your knowledge
-  **Projects:** Lesson-end projects and course-end projects to develop your machine learning skills by solving real-life, industry-based projects

