

# AI & Machine Learning Program

9 months

Online

Part-time

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# What is Machine Learning & AI

The Machine Learning and AI Program by TripleTen is a 9-month program designed for people from diverse backgrounds. You don't need prior tech experience—just the ambition to re-skill and become a highly paid professional in one of the fastest-growing fields.

The goal is to equip you with all the skills required to land a job in the tech industry. You will learn everything from the foundations of Python and statistics to advanced topics like Neural Networks, Computer Vision, Natural Language Processing, and Large Language Models. By the end of the program, you will have 15 projects in your portfolio to show employers the exceptional specialist you have become.

And while mastering technical tools, you will also develop the soft skills that ensure success. You'll practice time management, teamwork, and problem-solving, as well as industry-specific abilities like working with documentation and building an online presence to stand out in your job search.

# Program Structure

Your journey will be divided into sprints—two week long work intensive periods grouped into thematic modules.

Each sprint will have a particular learning objective, reinforced through quizzes and tasks. Most tech companies work in this format, so you will come prepared. At the end of the sprint, you will take the skills you've learned and combine them with your existing skills to work on a project that will be assessed by industry experts.

We provide some rough time estimates to help you plan and manage your schedule, and we recommend spending around 20 hours per week studying. However, we understand that everyone has different commitments and people learn at different speeds—so, we provide you with the possibility to extend your deadlines by 18 weeks in total.

# Lesson categories

Throughout the syllabus, lessons are divided into four categories, each marked with a different color:

## What Is Data Science

Grey lessons—core knowledge from the sprint content.

## Self-Management

Orange lessons—soft-skills lessons that are part of the career curriculum.

## Resume Building

Dark orange lessons—career projects where you prepare your resume and build job-ready skills.

## Project

Black lessons—projects at the end of each sprint where you can apply everything you've learned in practice.

# Module 1: Python for Data Analysis and Statistics

Python for Data Analysis and Statistics covers the foundation necessary to build a career in the data space. Python is a highly popular programming language, widely used in data applications, and statistics is the mathematical field underpinning Data Science. In this module we introduce both, and focus on Python as it is applied to statistics and data analysis.

## Sprint 1. Basic Python

What Is Data Science

Python Basics

Strings, Lists, Tuples

Algorithms

Guided Case Study

Time-Management & Goal Setting

## Sprint 2. Working with Data in Python

Functions

Cleaning and Transformations

Dictionaries

Loading and Inspecting Datasets

Using Pandas to Work with Data

Self-Management

Project

**Sprint 3.  
Exploratory Data  
Analysis (EDA)**

Reading and Viewing Data

Working with Missing and Duplicate Values

Data Visualization

Filtering Data

Data Types

Feature Engineering

Data Transformations

Managing Emotions & Navigating Conflicts

Project

**Sprint 4.  
Statistical Data  
Analysis**

Descriptive Statistics

Probability Foundations

Hypothesis Testing

Confidence Intervals and Significance

Communication & Teamwork

Project

## Sprint 5. Software Development Tools

Command Line and Environments

Git and GitHub

Intermediate Python

Strategizing Your Job Search

Project

## Sprint 6. Integrated Project 1

A video game retailer has user and expert reviews, genre, console, and historical data on game sales available. Identify patterns that determine whether a game succeeds or not in order to spot potential big winners and plan advertising campaigns.

Resume Building

## Sprint 7. Data Collection and Storage

Retrieving Data from Online Resources

SQL as a Tool for Working with Data

Advanced SQL Features for Analysts

Relationships Between Tables

PySpark

Cultivating Professional Relationships

Project

# Module 2: Machine Learning

Data Science can do many things, but one of the most magical is Machine Learning—making computer models that can predict and enable inferences about the real world. Machine Learning builds on everything we have learned so far—statistics, Python, and software engineering—to enable creating intelligent systems.

This module introduces Machine Learning, covers supervised learning (including regression and classification models), and discusses how to explain Machine Learning and apply it in practical business situations.

Sprint 8.  
Introduction  
to Machine  
Learning

The ML Workflow

Avoiding Data Leakage

Regression and Classification Basics

Evaluation Metrics and Error Analysis

Iterating with Simple Improvements

Project

## Sprint 9. Feature Engineering and Model Optimization

Feature Engineering

Feature Selection

Hyperparameter Tuning

Cross-Validation and Robust Evaluation

Ensembles

Handling Imbalanced Data

Project

## Sprint 10. APIs and Web Services for ML

API Fundamentals and REST

Flask for Simple ML Endpoints

FastAPI for Production Services

Model Serialization and Versioning

Security, Rate Limiting, Logging, and Monitoring

Testing with Postman and Best Practices

Project

## Sprint 11. Docker and Containerization

Docker Images, Containers, Registries,  
Networking, Volumes

Efficient Dockerfiles

GPU-Ready and Notebook Containers

Multi-Service Workflows with Docker Compose;  
Intro to Kubernetes

Project

# Module 3: Neural Networks, Cloud, and Production Systems

Modern data products rely on deep learning, scalable cloud platforms, and reliable production practices. In this module you'll train neural networks, build applications in computer vision and NLP (including LLMs), leverage AWS for scalable training and deployment, and implement robust MLOps so models can run, be monitored, and improve in the real world.

## Sprint 12. Neural Networks and Deep Learning

Perceptrons, Activations, Forward/Backprop

Optimizers and Stabilization

TensorFlow/Keras

PyTorch

Advanced Training

Mock HR Interview

Project

## Sprint 13. AWS for Machine Learning

AWS Foundations

Storage for ML

Compute for ML

SageMaker

Serverless ML

Project

## Sprint 14. Computer Vision

Image Processing with OpenCV

CNNs from Scratch and Training Practices

Modern Architectures

Applications: Classification, Detection, Segmentation

AWS Rekognition and Deployment on SageMaker

Mock Technical Interview

Project

## Sprint 15. Natural Language Processing

Text Preprocessing

Representations

Traditional Models

Transformer Basics

Applications: Classification, QA,  
Summarization, Translation

Project

## Sprint 16. Large Language Models and Generative AI

LLM Landscape, Capabilities, and Limitations

Working with APIs

Prompt Engineering

Retrieval-Augmented Generation

Project

Adaptation and Guardrails

Generative Apps

## Sprint 17. MLOps and Production Systems

Versioning Code and Data

CI/CD for ML

Pipeline Orchestration

Monitoring and Observability

Experimentation

Project

## Sprint 18. Capstone Project

Project Scope and Requirements

End-to-End ML System

Cloud Deployment and Monitoring

Transformer Basics

Documentation, Testing, and Presentation

Stakeholder Review and Iteration

# Career Preparation

## From day one

Access career-focused lessons that strengthen both:

Hard skills: for job applications

Soft skills: networking, communication, self-promotion and interview techniques

## As you progress

- Participate in Code Jams—team competitions to apply your skills
- Complete an Externship—gain real-world business experience (you'll learn more as you advance!)

## Midway through

Partner with a Career Coach to:

- Develop a personalized job search strategy
- Perfect your resume, LinkedIn profile, and portfolio
- Practice interview & networking techniques in group and individual sessions

## After graduation

Enter the job search phase with support from a Career Coach:

- Regular check-ins to keep you on track
- Feedback to improve applications and networking
- AI-powered job search platform to manage applications and track progress

**tripleten**

# Learn the job. Land the job.

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