MACHINE LEARNING CERTIFICATE

Program Description

Machine learning is emerging as today's fastest-growing career as the role of automation and AI expands in every industry and function.

Cornell's Machine Learning certificate program equips you to implement machine learning algorithms using Python. You will use a combination of math and intuition to practice framing machine learning problems and construct a mental model to understand how data scientists approach these problems programmatically. Through investigation and implementation of k-Nearest Neighbors, naive Bayes, regression trees, and others, you'll explore a variety of machine learning algorithms and practice selecting the best model, considering key principles of how to implement those models effectively. You'll also gain the skills to work with advanced generative models, including transformers, to create and refine both text and image outputs. In addition, you'll have an opportunity to implement algorithms on live data while practicing debugging and improving models through approaches such as ensemble methods and support vector machines. Finally, the coursework will explore the inner workings of neural networks and how to construct and adapt neural networks for various types of data.

This program uses Python and the NumPy library for code exercises and projects. Projects will be completed using Jupyter Notebooks.

Machine learning is complex. While you do not need to have machine learning experience in order to take the program, we strongly recommend having prior experience in math, including familiarity with Python, probability theory, statistics, multivariate calculus, and linear algebra.

This certificate program includes two self-paced lessons covering the linear algebra computations used in the Machine Learning curriculum. You may refer to these lessons at any time before or during your Machine Learning program.

Check your readiness with this free pretest now.

Key Takeaways

- Gain the foundational linear algebra skills needed for Machine Learning
- Redefine tasks as machine learning problems using fitting concepts and terminology
- Match the assumptions algorithms make with the properties of your data
- Create a simple image based face recognition system
- Estimate probability distributions from data and build a name classifier
- Implement an email spam classifier filter with convex optimization
- Perform model selection to find the best algorithmic setting for a given problem
- Implement a machine learning setup from start to finish
- Debug machine learning algorithms in a principled manner utilizing the bias variance trade-off
- Convert linear classifiers into non-linear classifiers to learn from complex datasets

- Construct and train deep neural networks for various data modalities, in particular images and text

What You'll Earn

- Machine Learning Certificate from Cornell Computing and Information Science
- 126 Professional Development Hours (12.6 CEUs)

Who Should Enroll

- Programmers
- Developers
- Data analysts
- Statisticians
- Data scientists
- Software engineers

Total Investment

- 3.5 months to complete all the courses

How to Enroll

For more information on how to enroll, please visit Machine Learning Certificate (https://ecornell.cornell.edu/certificates/technology/machine-learning/).

Courses

The courses in this certificate program are required to be completed in the order that they appear.

Code	Title	Hours
eCornell CIS531	Problem-Solving with Machine Learning	0
eCornell CIS532	Estimating Probability Distributions	0
eCornell CIS533	Learning with Linear Classifiers	0
eCornell CIS534	Decision Trees and Model Selection	0
eCornell CIS535	Debugging and Improving Machine Learning Models	0
eCornell CIS536	Learning with Kernel Machines	0
eCornell CIS537	Deep Learning and Neural Networks	0