

W UNIVERSITY of WASHINGTON

05/01/2020

Emilin Antony

has successfully completed

Machine Learning Foundations: A Case Study Approach

a MOOC from the University of Washington and offered through Coursera

**COURSE
CERTIFICATE**



A handwritten signature in black ink that reads "Emily Fox".

Emily Fox
Amazon Professor of Machine Learning
Statistics

A handwritten signature in black ink that reads "Carlos Guestrin".

Carlos Guestrin
Amazon Professor of Machine Learning
Computer Science and Engineering

Verify at coursera.org/verify/T78NACKZ6GEU
Coursera has confirmed the identity of this individual and
their participation in the course.

Syllabus - What you will learn from this course

Content Rating 🌟 93% (47,793 ratings) ⓘ

WEEK

1



3 hours to complete

Welcome

Machine learning is everywhere, but is often operating behind the scenes. <p>This introduction to the specialization provides you with insights into the power of machine learning, and the multitude of intelligent applications you personally will be able to develop and deploy upon completion.</p>We also discuss who we are, how we got here, and our view of the future of intelligent applications.



18 videos (Total 84 min), 8 readings, 1 quiz [SEE ALL](#)

WEEK

2



2 hours to complete

Regression: Predicting House Prices

This week you will build your first intelligent application that makes predictions from data.<p>We will explore this idea within the context of our first case study, predicting house prices, where you will create models that predict a continuous value (price) from input features (square footage, number of bedrooms and bathrooms,...).</p>This is just one of the many places where regression can be applied.Other applications range from predicting health outcomes in medicine, stock prices in finance, and power usage in high-performance computing, to analyzing which regulators are important for gene expression.</p>You will also examine how to analyze the performance of your predictive model and implement regression in practice using a Jupyter notebook.

WEEK

3



2 hours to complete

Classification: Analyzing Sentiment

How do you guess whether a person felt positively or negatively about an experience, just from a short review they wrote? In our second case study, analyzing sentiment, you will create models that predict a class (positive/negative sentiment) from input features (text of the reviews, user profile information,...). This task is an example of classification, one of the most widely used types of machine learning with a broad range of applications, including ad targeting, spam detection, medical diagnosis, and business classification. You will

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19 videos (Total 75 min), 3 readings, 2 quizzes [SEE ALL](#)

WEEK

4



2 hours to complete

Clustering and Similarity: Retrieving Documents

A reader is interested in a specific news article and you want to find a similar articles to recommend. What is the right notion of similarity? How do I automatically search over documents to find the one that is most similar? How do I quantitatively represent the documents in the first place? In this third case study, retrieving documents, you will examine various document representations and an algorithm to retrieve the most similar subset. You will also consider structured representations of the documents that automatically group articles by similarity (e.g., document topic). You will actually build an intelligent document retrieval system for Wikipedia entries in an Jupyter notebook.

WEEK

5



2 hours to complete

Recommending Products

Ever wonder how Amazon forms its personalized product recommendations? How Netflix suggests movies to watch? How Pandora selects the next song to stream? How Facebook or LinkedIn finds people you might connect with? Underlying all of these technologies for personalized content is something called collaborative filtering. You will learn how to build such a recommender system using a variety of techniques, and explore their tradeoffs. One method we examine is matrix factorization, which learns features of users and products to form recommendations. In a Jupyter notebook, you will use these techniques to build a real song recommender system.



19 videos (Total 94 min), 3 readings, 2 quizzes [SEE ALL](#)

WEEK

6



2 hours to complete

Deep Learning: Searching for Images

You've probably heard that Deep Learning is making news across the world as one of the most promising techniques in machine learning. Every industry is dedicating resources to unlock the deep learning potential, including for tasks such as image tagging, object recognition, speech recognition, and text analysis. In our final case study, searching for images, you will learn how layers of neural networks provide very distinctive (non-linear) features that provide impressive performance in image classification and retrieval tasks.



18 videos (Total 74 min), 4 readings, 2 quizzes [SEE ALL](#)

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18 videos (Total 74 min), 4 readings, 2 quizzes [SEE ALL](#)



1 hour to complete

Closing Remarks

In the conclusion of the course, we will describe the final stage in turning our machine learning tools into a service: deployment. We will also discuss some open challenges that the field of machine learning still faces, and where we think machine learning is heading. We conclude with an overview of what's in store for you in the rest of the specialization, and the amazing intelligent applications that are ahead for us as we evolve machine learning.



7 videos (Total 33 min), 1 reading [SEE ALL](#)