

**NAME**      **ADNAN**

**ID**            **13507**

**PROGRAM**    **BS(CS)**

## Course Week 1.

The screenshot shows the Coursera interface for the 'Welcome to Machine Learning!' video. The browser address bar displays 'coursera.org/learn/machine-learning/lecture/26Au7/welcome-to-machine-learning'. The page features a search bar with the text 'What do you want to learn?' and a search icon. Below the search bar, the breadcrumb trail reads 'Machine Learning > Week 1 > Welcome to Machine Learning!'. On the left, a sidebar lists the course content under the heading 'Welcome'. The 'Introduction' section is expanded, showing a list of items with green checkmarks: 'Video: Welcome' (6 min), 'Video: What is Machine Learning?' (7 min), 'Reading: What is Machine Learning?' (5 min), 'Reading: How to Use Discussion Forums' (4 min), 'Video: Supervised Learning' (12 min), 'Reading: Supervised Learning' (4 min), 'Video: Unsupervised Learning' (14 min), and 'Reading: Unsupervised Learning' (3 min). The main content area displays the video player for 'Welcome to Machine Learning!', showing a man in a light blue shirt sitting on a dark couch. Below the video player are controls for 'Save Note', 'Discuss', and 'Download', along with social sharing icons for share, comment, and print.

## QUIZ 1.

The screenshot shows the Coursera interface for a 'PRACTICE QUIZ • 10 MIN' on 'Linear Algebra'. The browser address bar displays 'coursera.org/learn/machine-learning/quiz/52WU/linear-algebra'. The page features a search bar with the text 'What do you want to learn?' and a search icon. Below the search bar, the breadcrumb trail reads 'Machine Learning > Week 1 > Linear Algebra'. On the left, a sidebar lists the course content under the heading 'Linear Algebra'. The 'Parameter Learning' section is expanded, showing a list of items with green checkmarks: 'Reading: Cost Function Representation' (3 min), 'Video: Cost Function' (8 min), 'Reading: Cost Function' (3 min), 'Video: Cost Function - Intuition I' (11 min), 'Reading: Cost Function - Intuition I' (4 min), 'Video: Cost Function - Intuition II' (8 min), and 'Reading: Cost Function - Intuition II' (3 min). The 'Review' section is also expanded, showing 'Reading: Lecture Slides' (10 min) and 'Practice Quiz: Linear Algebra'. The main content area displays the quiz results for 'Linear Algebra'. It shows a green checkmark next to 'Submit your assignment' and a 'Try again' button. Below this, it shows a green checkmark next to 'Receive grade' with the text 'TO PASS: 80% or higher'. To the right, the 'Grade' is displayed as '80%' and a 'View Feedback' button is visible. Below the grade, it says 'We keep your highest score'. At the bottom right of the main content area are social sharing icons for share, comment, and print.

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## Course Week 2.

**coursera**

Explore ▾

What do you want to learn?



For Enterprise

You're watching trial video 3 of 3. Create an account to watch unlimited course videos.

Join for free

### Multiple Features

Share



## Linear Regression with multiple variables

## Multiple features

Machine Learning



Machine Learning > Week 2 > Setting Up Your Programming Assignment Environment

**Environment Setup Instructions**

- ✓ Reading: Setting Up Your Programming Assignment Environment 8 min
- ✓ Reading: Access the MATLAB Online Trial and the Exercise Files for MATLAB Users 3 min
- ✓ Reading: Installing Octave on Windows 3 min
- ✓ Reading: Installing Octave on Mac OS X (10.10 Yosemite and 10.9 Mavericks and Later) 10 min
- ✓ Reading: Installing Octave on Mac OS X (10.8 Mountain Lion and Earlier) 3 min
- ✓ Reading: Installing Octave on GNU/Linux 7 min

Octave is a free, open-source application available for many platforms. It has a text interface and an experimental graphical one.

- Octave is a free, open-source application available for many platforms. It has a text interface and an experimental graphical one.
- MATLAB is proprietary software, but a free trial license to MATLAB Online is being offered for the completion of this course.

**FAQ**

**Does it cost money?**

While you're taking the course, both software packages are available free of charge. Octave is distributed under the GNU Public License, which means that it is always free to download and distribute. MATLAB Online licenses are available for completing the programming assignments in the course only. For any other purposes (like your own work after you complete the course), MATLAB can be licensed to [individuals](#) or companies from Mathworks directly.

**Is there a difference in quality?**

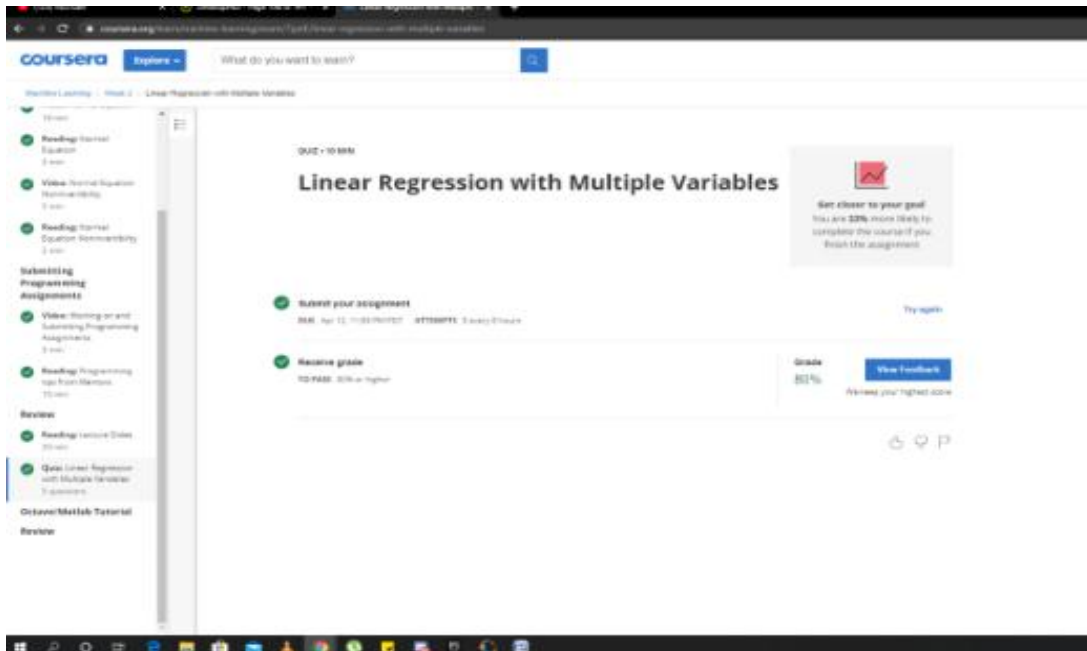
There are several subtle differences between the two software packages. MATLAB may offer a smoother experience (especially for Mac users), contains a larger number of functions, and can be more robust to failure. However, the functions used in this course are available in both packages, and many students have successfully completed the course using either.

**How do I install one of them?**

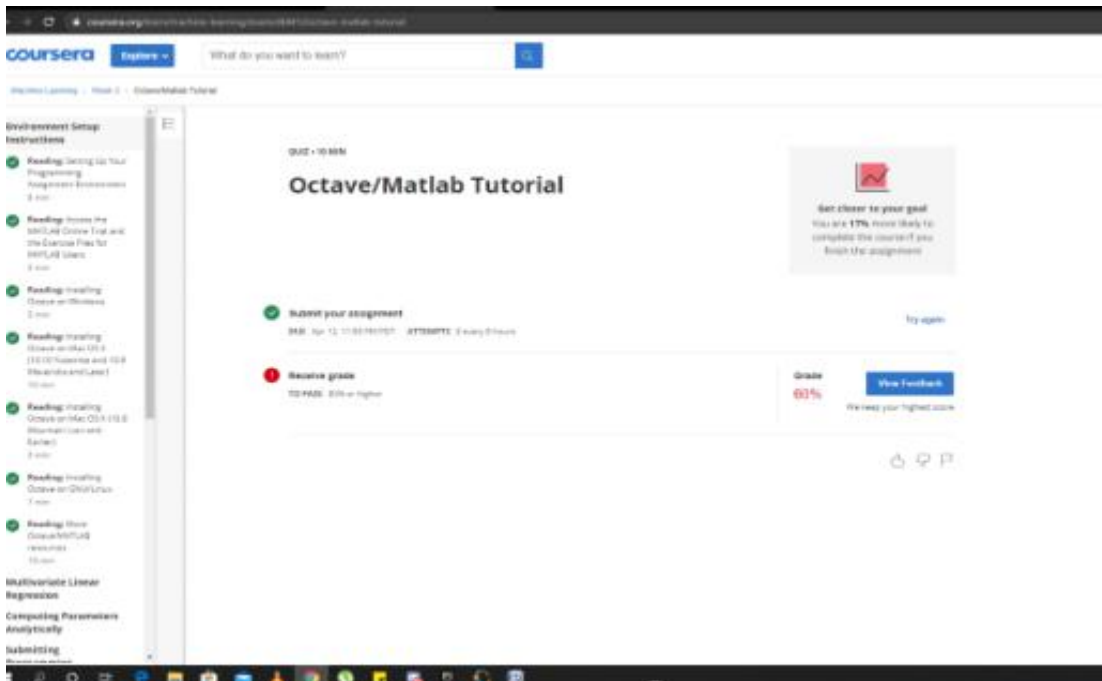
To install Octave, see installation instructions for [Windows](#), [Mac OS X \(10.10 Yosemite and 10.9 Mavericks\)](#), [other Mac OS X](#), or [GNU/Linux](#). Instructions for

- Accessing the free MATLAB Online trial
- Downloading the exercise files for MATLAB Online and newer versions of MATLAB desktop

## Quiz 1.



## Quiz 2.



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## Course Week 3.

course101/machine-learning/week4/classification

**coursera** Explore - What do you want to learn?

Machine Learning / Week 4 / Classification


**Classification and Representation**

- View Classification 3 min
- Reading Classification 2 min
- View Hypothesis Representation 7 min
- Reading Hypothesis Representation 4 min
- View Decision Boundary 11 min
- Reading Decision Boundary 3 min

**Logistic Regression Model**

- View Cost Function 10 min
- Reading Cost Function 2 min
- View Simplified Cost Function and Gradient Descent 10 min
- Reading Simplified Cost Function and Gradient Descent 3 min
- View Advanced Optimization

**Classification**



0:00 / 0:08

English [Help on This Video](#)

0:00 In this and the next few videos, I want to start to talk about classification problems, where the variable  $y$  that you want to predict is valued, isn't driving an algorithm called logistic regression, which is one of the most popular and most widely used learning algorithms today.

0:05 Here are some examples of classification problems. Earlier we talked about email spam classification as an example of a classification problem. Another example would be classifying

## Quiz.

course101/machine-learning/week4/regularization

**coursera** Explore - What do you want to learn?

Machine Learning / Week 4 / Regularization

**Classification Overview** 3 min

**Review**

**Solving the Problem of Overfitting**

- View The Problem of Overfitting 3 min
- Reading The Problem of Overfitting 3 min
- View Cost Function 10 min
- Reading Cost Function 2 min
- View Regularized Linear Regression 10 min
- Reading Regularized Linear Regression 3 min
- View Regularized Logistic Regression 3 min
- Reading Regularized Logistic Regression 3 min

**Review**

- Reading Lecture Notes 10 min
- Quiz Regularization 3 questions
- Programming Assignment Logistic

**QUIZ - 10 MIN**

## Regularization

**Submit your assignment** [Try again](#)

Due: Apr 15, 11:59 PM EDT ATTEMPTS: 3 every 8 hours

**Receive grade**

Grade: 80% [View Feedback](#)

10 PM EDT We keep your highest score

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## Course Week 4.



course.org/search/machine-learning/courses/102/neural-networks-learning

**coursera** Explore ▾ What do you want to learn? 🔍

Machine Learning ▾ Week 6 ▾ Cost Function

**Cost Function and Backpropagation**

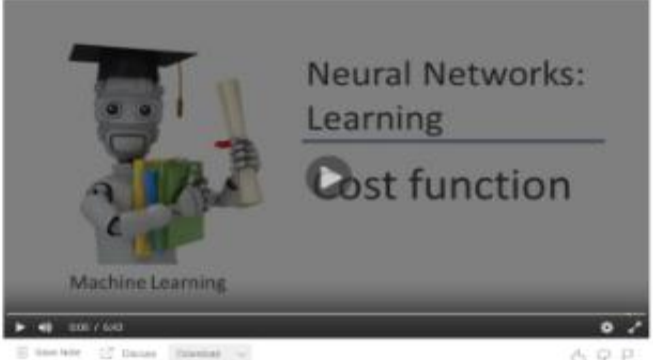
- View Cost Function 8 min
- Reading Cost Function 8 min
- View Backpropagation Algorithm 11 min
- Reading Backpropagation Algorithm 10 min
- View Backpropagation Inuition 12 min
- Reading Backpropagation Inuition 4 min

**Backpropagation in Practice**

Application of Neural Networks

Review

**Cost Function**



Machine Learning

0:00 / 4:00

View Note Discuss Download

English Help Us Translate

0:00 Neural networks are one of the most powerful learning algorithms that we have today. In this and in the next few videos, I'd like to start talking about a learning algorithm for fitting the parameters of a neural network given a training set. As with the discussion of most of our learning algorithms, we're going to begin by talking about the cost function for fitting the parameters of the network.

0:22 I'm going to focus on the application of neural networks to classification problems. So suppose we

## Quiz.

course.org/search/machine-learning/courses/102/neural-networks-learning

**coursera** Explore ▾ What do you want to learn? 🔍

Machine Learning ▾ Week 6 ▾ Neural Networks: Learning

**Cost Function and Backpropagation**

- View Cost Function 8 min
- Reading Cost Function 8 min
- View Backpropagation Algorithm 11 min
- Reading Backpropagation Algorithm 10 min
- View Backpropagation Inuition 12 min
- Reading Backpropagation Inuition 4 min

**Backpropagation in Practice**

- View Implementation: Non-Overlapping Parameters 7 min
- Reading Implementation: Non-Overlapping Parameters 3 min
- View Gradient Checking 11 min
- Reading Gradient Checking

**QUIZ • 10 MIN**

### Neural Networks: Learning

Submit your assignment [Try again](#)

0/01 May 3, 11:00 PM PDT ATTEMPTS: 3 every 8 hours

Receive grade

Grade: 80%

View Feedback

We keep your highest score

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## Course Week 6.

[coursera](#) [Explore](#) What do you want to learn?

[Machine Learning](#) / [Week 6](#) / [Deciding what to try next](#)


**valuating a learning algorithm**

- Video: Deciding What to Try Next 5:36
- Video: Evaluating a Hypothesis 7:30
- Reading: Evaluating a Hypothesis 4:30
- Video: Model Selection and Train/Test/Dev Sets 11:30
- Reading: Model Selection and Train/Test/Dev Sets 3:30

**Bias vs. Variance**

- Video: Diagnosing Bias vs. Variance 7:30
- Reading: Diagnosing Bias vs. Variance 3:30
- Video: Regularization and Bias/Variance 11:30
- Reading: Regularization and Bias/Variance 3:30
- Video: Learning Curves 11:30

**Deciding What to Try Next**



English [Help on This Video](#)

0:00 If how you have seen a lot of different learning algorithms.

0:02 And if you've been following along these videos you should consider yourself an expert on many state-of-the-art machine learning techniques. But even among people that know a certain learning algorithm, there's often a huge difference between someone that really knows how to powerfully and effectively apply that algorithm, versus someone that's less familiar with some of the material.

**Course Week 7.**

[coursera](#) [Explore](#) What do you want to learn?

[Machine Learning](#) / [Week 7](#) / [Large Margin Intuition](#)

**Large Margin Classifiers**

- Video: Optimization Objective 14:30
- Video: Large Margin Intuition 10:30
- Video: Intuition Behind Large Margin Classifiers 10:30

**Formals**

- Video: Formal 11:30
- Video: Formal 11:30


**Skills to Practice**

- Video: Using the SVM 21:30

**Review**

- Reading: Lecture Notes 10:30
- Quiz: Support Vector Machines 3 questions
- Programming Assignment: Support Vector Machines 5h

**Large Margin Intuition**



English [Help on This Video](#)

0:00 Sometimes people talk about support vector machines, as large margin classifiers, in the videos I'd like to tell you what that means, and this will also give us a useful picture of what an SVM hypothesis may look like. Here's my cost function for the support vector machine.

0:27 Where here on the left I've plotted my cost  $J(\theta)$  function that I used for positive examples and on the right I've plotted my

**Quiz.**

course.org/courses/machine-learning/lectures/Support-Vector-Machines

**coursera** Explore What do you want to learn?

Machine Learning > Week 7 > Support Vector Machines

**Large Margin Classification**

- View Completion Overview 14 min
- View Large Margin Overview 13 min
- View Mathematics Behind Large Margin Classification 15 min

**Kernels**

- View Kernel Overview 13 min
- View Kernel 1 15 min

**SVMs in Practice**

- View Using an SVM 27 min

**Review**

- Reading Lecture Notes 15 min
- Quiz Support Vector Machines 5 questions
- Programming Assignment Support Vector Machines 30 min

**QUIZ - 10 MIN**

## Support Vector Machines

Submit your assignment [Try again](#)

0/10 May 17, 11:22 PM EDT ATTEMPTS: 2 out of 3 used

Receive grade **00/1000** [View history](#)

Grade: **80%** [View feedback](#)

We keep your progress secure

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## Course Week 8.

course.org/courses/machine-learning/lectures/K-Means-Algorithm

**coursera** Explore What do you want to learn?

Machine Learning > Week 8 > K-Means Algorithm

**Clustering**

- View Completion Learning Introduction 3 min
- View K-Means Algorithm Overview 12 min
- View Completion Overview 7 min
- View K-Means Initialization 7 min
- View Choosing the Number of Clusters 8 min

**Review**

- Reading Lecture Notes 15 min
- Quiz Unsupervised Learning 5 questions


**Motivation**

- View Motivation 1 Data Compression 10 min
- View Motivation 2 Visualization 5 min

**Principal Component Analysis**

- Applying PCA
- Review

**K-Means Algorithm**



Machine Learning

0:00 / 12:32

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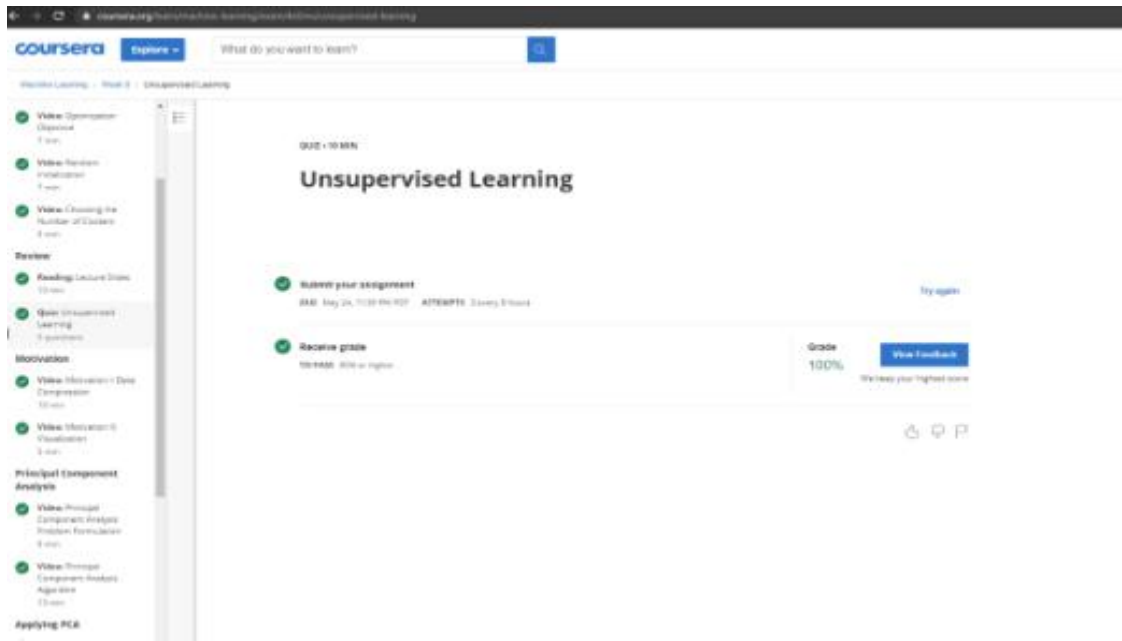
English [Help on Translations](#)

0:00 In the clustering problem we are given an unlabeled data set and we would like to have an algorithm automatically group the data into coherent subsets or into coherent clusters for us.

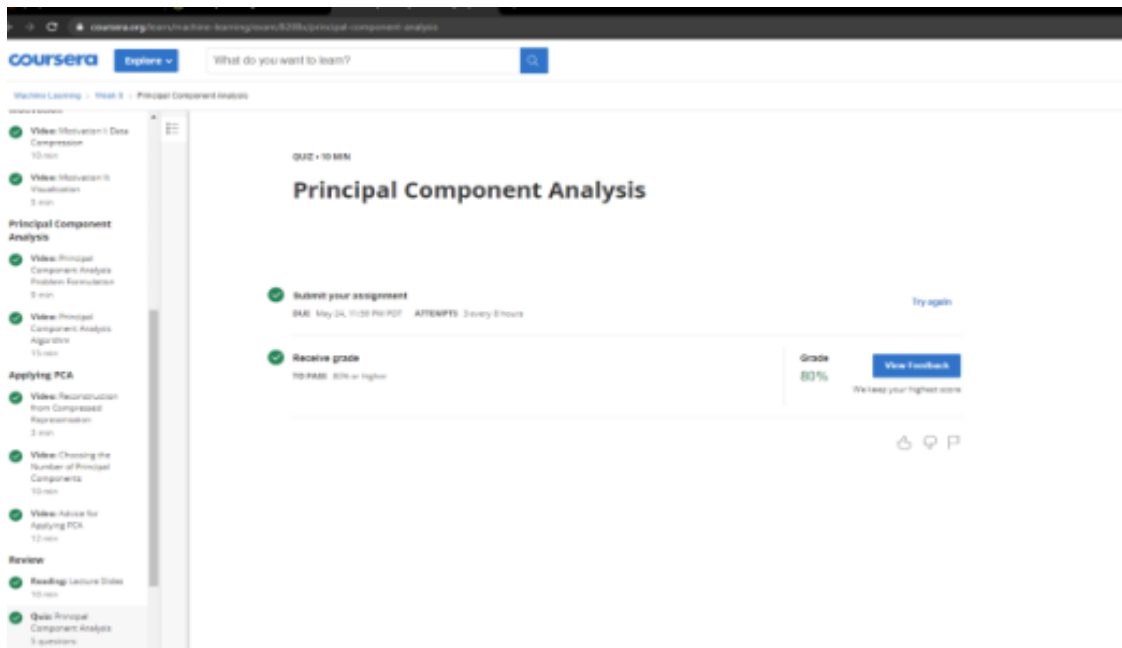
0:02 The K-Means algorithm is by far the most popular, by far the most widely used clustering algorithm, and in this video I would like to tell you what the K-Means Algorithm is and how it works.

## Quiz 1.





Quiz 2.



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Course Week 9.



course.org/course-home/learning-track/10/coursera-recommender-systems

**coursera** Explains ▾ What do you want to learn? 🔍

Machine Learning ▾ Week 10 ▾ Recommender Systems

- Reading Lecture Notes 10 min
- Quiz Anomaly Detection 3 questions
- Predicting Movie Ratings**
  - Video Problem Formulation 7 min
  - Video Content Based Recommendations 14 min
- Collaborative Filtering**
  - Video Collaborative Filtering 10 min
  - Video Collaborative Filtering Algorithm 8 min
- Low Rank Matrix Factorization**
  - Video Recommendation Low Rank Matrix Factorization 8 min
  - Video Implementation: Least Mean Squares 8 min
- Review
  - Reading Lecture Notes 10 min
  - Quiz Recommender

**QUIZ • 10 MIN**

## Recommender Systems

Submit your assignment [Try again](#)

DATE: May 21, 11:58 PM PDT ATTEMPTS: 2 out of 3 hours

Receive grade

10 PASS: 80% or higher

Grade: **80%** [View Feedback](#)

We keep your highest score

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## Course Week 10.

course.org/course-home/learning-track/10/coursera-learning-with-large-datasets

**coursera** Explains ▾ What do you want to learn? 🔍

Machine Learning ▾ Week 10 ▾ Learning With Large Datasets

- Gradient Descent with Large Datasets**
  - Video Learning With Large Datasets 8 min
  - Video Stochastic Gradient Descent 12 min
  - Video Mini-Batch Gradient Descent 8 min
  - Video Stochastic Gradient Descent: Convergence 11 min
- Advanced Topics**
  - Video Online Learning 12 min
  - Video Video Feature and Data Parallelism 14 min
- Review
  - Reading Lecture Notes 10 min
  - Quiz Large Scale Machine Learning 8 questions

**Learning With Large Datasets**

Large scale machine learning

Learning with large datasets

Machine Learning

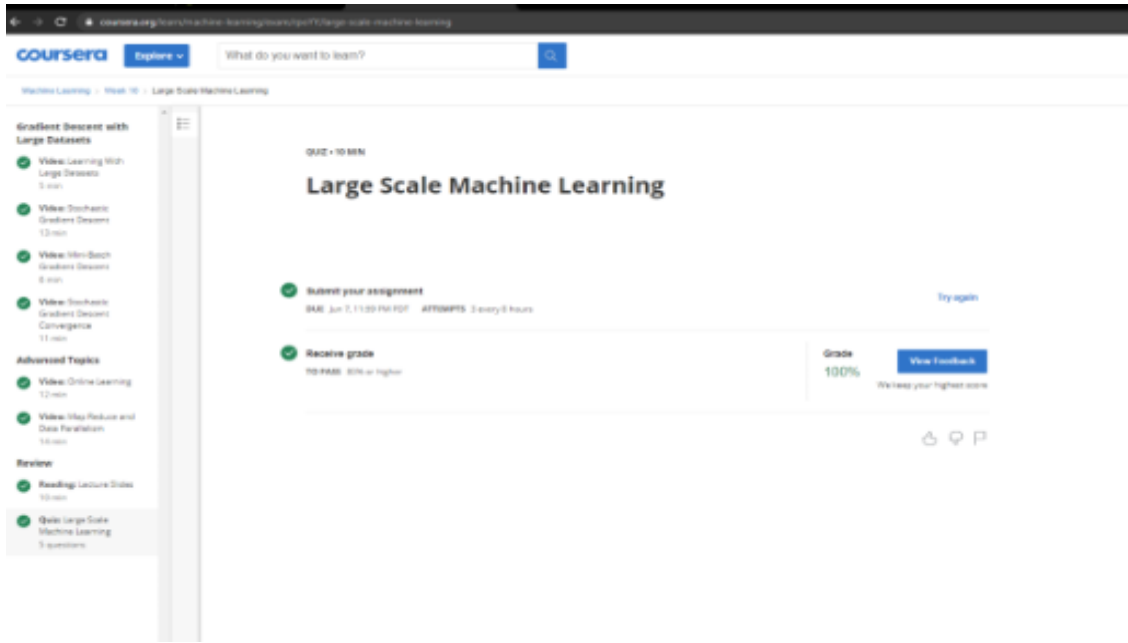
0:00 / 5:40

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English [Help Us Translate](#)

0:00 In the next few videos, we'll talk about large scale machine learning. That is, algorithms that scaling with big data sets. If you look back at a recent 5 or 10 year history of machine learning, one of the reasons that learning algorithms work so much better now than ever is, 5 years ago, it just the sheer amount of data that we have now and that we can train our algorithms on. In these next few videos, we'll talk about algorithms for dealing when we have such massive data sets.

## Quiz ...



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..... ***THE COURSE END*** .....



