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This course is part of the DeepLearning.AI TensorFlow Developer Professional Certificate

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## Sequences, Time Series and Prediction

★★★★★ 4.6 3,244 ratings • 522 reviews



Laurence Moroney

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### About this Course

254,588 recent views

If you are a software developer who wants to build scalable AI-powered algorithms, you need to understand how to use the tools to build them. This Specialization will teach you best practices for using TensorFlow, a popular open-source framework for machine learning.

In this fourth course, you will learn how to build time series models in TensorFlow. You'll first implement best practices to prepare time series data. You'll also explore how RNNs and 1D ConvNets can be used for prediction. Finally, you'll apply everything you've learned throughout the Specialization to build a sunspot prediction model using real-world data!

The Machine Learning course and Deep Learning Specialization from Andrew Ng teach the most important and foundational principles of Machine Learning and Deep Learning. This new deeplearning.ai TensorFlow Specialization teaches you how to use TensorFlow to implement those principles so that you can start building and applying scalable models to real-world problems. To develop a deeper understanding of how neural networks work, we recommend that you take the Deep Learning Specialization.

#### WHAT YOU WILL LEARN

- ✓ Solve time series and forecasting problems in TensorFlow
- ✓ Prepare data for time series learning using best practices
- ✓ Explore how RNNs and ConvNets can be used for predictions
- ✓ Build a sunspot prediction model using real-world data

#### SKILLS YOU WILL GAIN

[Forecasting](#) [Machine Learning](#) [Tensorflow](#) [Time Series](#) [prediction](#)

#### Shareable Certificate

Earn a Certificate upon completion



#### 100% online

Start instantly and learn at your own schedule.



#### Course 4 of 4 in the

DeepLearning.AI TensorFlow Developer



#### Flexible deadlines

Reset deadlines in accordance to your schedule.



#### Intermediate Level

You should take the first 3 courses of the TensorFlow Specialization and be comfortable coding in Python and understanding high school-level math.



#### Approx. 13 hours to complete



#### English

Subtitles: French, Portuguese (Brazilian), Russian, English, Spanish

### Instructor

Instructor rating 4.71/5 (353 Ratings) [\(i\)](#)[Laurence Moroney](#)AI Advocate  
Google Brain 262,712 Learners  
 40 Comments

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### DeepLearning.AI

Founded by Andrew Ng, DeepLearning.AI is an education technology company that develops a global community of AI talent.

DeepLearning.AI's expert-led educational experiences provide AI practitioners and non-technical professionals with the necessary tools to go all the way from foundational basics to advanced application, empowering them to build an AI-powered future.

On Coursera, I gained the confidence I needed to start a new journey in life. Now I'm in the process of transitioning to what I've always dreamed of doing.

— Khadija A.



Learning from leading scientists about what's going on in the field right now is so much different than the experience of reading a textbook.

— Peter W.



Coursera gave me the confidence to learn anything I want to break into a new career.

○ ● ○

## People interested in this course also viewed



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## Syllabus - What you will learn from this course

Content Rating 97% (6,051 ratings)

WEEK



3 hours to complete

1

### Sequences and Prediction

Hi Learners and welcome to this course on sequences and prediction! In this course we'll take a look at some of the unique considerations involved when handling sequential time series data -- where values change over time, like the temperature on a particular day, or the number of visitors to your web site. We'll discuss various methodologies for predicting future values in these time series, building on what you've learned in previous courses!



10 videos (Total 33 min), 3 readings, 3 quizzes [SEE ALL](#)

WEEK



3 hours to complete

2

## Deep Neural Networks for Time Series

Having explored time series and some of the common attributes of time series such as trend and seasonality, and then having used statistical methods for projection, let's now begin to teach neural networks to recognize and predict on time series!



10 videos (Total 27 min), 5 readings, 3 quizzes [SEE ALL](#)

WEEK



3 hours to complete

3

## Recurrent Neural Networks for Time Series

Recurrent Neural networks and Long Short Term Memory networks are really useful to classify and predict on sequential data. This week we'll explore using them with time series...



10 videos (Total 20 min), 5 readings, 3 quizzes [SEE ALL](#)

WEEK



3 hours to complete

4

## Real-world time series data

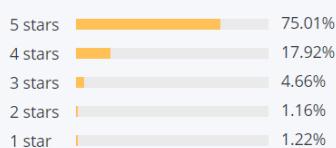
On top of DNNs and RNNs, let's also add convolutions, and then put it all together using a real-world data series -- one which measures sunspot activity over hundreds of years, and see if we can predict using it.



11 videos (Total 24 min), 5 readings, 3 quizzes [SEE ALL](#)

## Reviews

**4.6** 522 reviews



### TOP REVIEWS FROM SEQUENCES, TIME SERIES AND PREDICTION

by WE Jul 17, 2020

The course is fantastic. It was a bit short and with some hyperparameters tuning focus, it could have been great. Also, it seems that it is biased to show that LSTM is always superior to RNN networks.

by MI Jun 7, 2020

I really enjoyed this course, especially because it combines all different components (DNN, CONV-NET, and RNN) together in one application. I look forward to taking more courses from deeplearning.ai.

by OR Aug 4, 2019

It was an amazing experience to learn from such great experts in the field and get a complete understanding of all the concepts involved and also get thorough understanding of the programming skills.

by JH Mar 22, 2020

Really like the focus on practical application and demonstrating the latest capability of TensorFlow. As mentioned in the course, it is a great compliment to Andrew Ng's Deep Learning Specialization.

[View all reviews](#)

## About the DeepLearning.AI TensorFlow Developer Professional Certificate

TensorFlow is one of the most in-demand and popular open-source deep learning frameworks available today. The DeepLearning.AI TensorFlow Developer Professional Certificate program teaches you applied machine learning skills with TensorFlow so you can build and train powerful models.

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You can share your Certificate in the Certifications section of your LinkedIn profile, on printed resumes, CVs, or other documents.

64,215 already enrolled

## Other courses in this Professional Certificate

  
Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning  
DeepLearning.AI  
1 COURSE

  
Convolutional Neural Networks in TensorFlow  
DeepLearning.AI  
1 COURSE

  
Natural Language Processing in TensorFlow  
DeepLearning.AI  
1 COURSE

## Frequently Asked Questions

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› What will I get if I subscribe to this Certificate?

› Will I earn university credit for completing the Course?

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