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Imperial College London

Getting started with TensorFlow 2

This course is part of **TensorFlow 2 for Deep Learning Specialization**

Taught in English | 22 languages available | Some content may not be translated

Instructor: Dr Kevin Webster

Enroll for Free
Starts Aug 19

Financial aid available

36,337 already enrolled

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Course
Gain insight into a topic and learn the fundamentals

4.9 ★ (563 reviews) | 96%

Intermediate level
Some related experience required

26 hours (approximately)

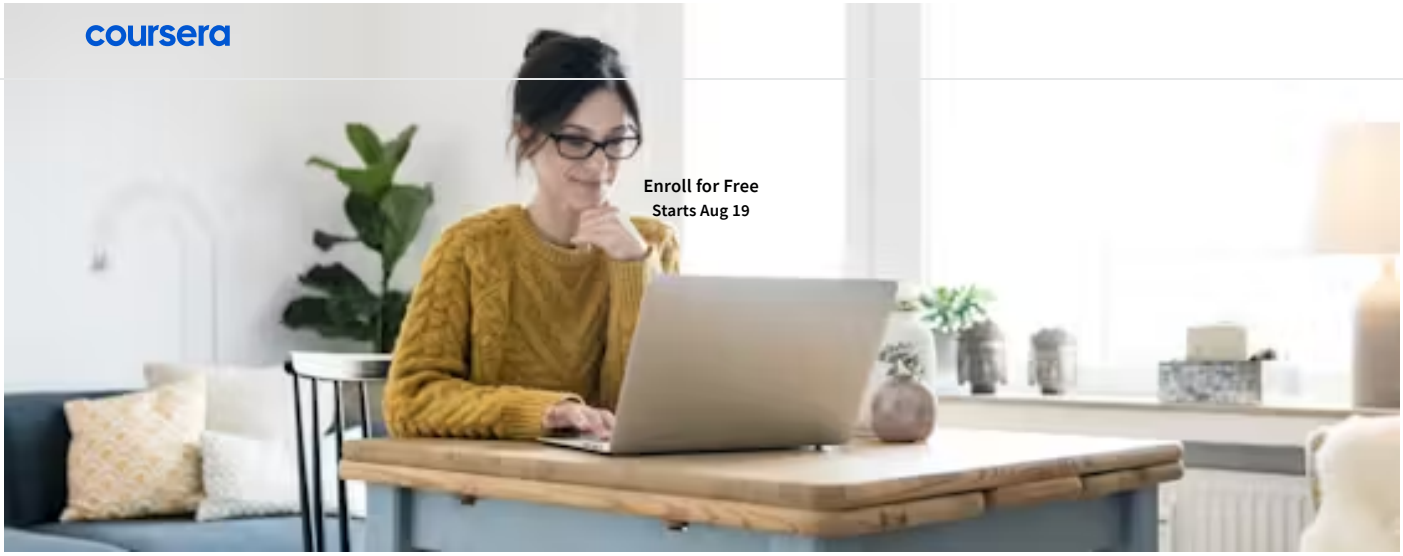
Flexible schedule
Learn at your own pace

View course modules

Details to know

Shareable certificate
Add to your LinkedIn profile

Assessments
3 quizzes



Build your subject-matter expertise

This course is part of the **TensorFlow 2 for Deep Learning Specialization**
When you enroll in this course, you'll also be enrolled in this Specialization.

- Learn new concepts from industry experts
- Gain a foundational understanding of a subject or tool
- Develop job-relevant skills with hands-on projects
- Earn a shareable career certificate

Earn a career certificate

Add this credential to your LinkedIn profile, resume, or CV
Share it on social media and in your performance review

There are 5 modules in this course

Welcome to this course on Getting started with TensorFlow 2!

In this course you will learn a complete end-to-end workflow for developing deep learning models with Tensorflow, from building, training, evaluating and predicting with models using the Sequential API, validating your models and including regularisation, implementing callbacks, and saving and loading models.

You will put concepts that you learn about into practice straight away in practical, hands-on coding tutorials, which you will be guided through by a graduate teaching assistant. In addition there is a series of automatically graded programming assignments for you to consolidate your skills.

At the end of the course, you will bring many of the concepts together in a Capstone Project, where you will develop an image classifier deep learning model from scratch.

Tensorflow is an open source machine library, and is one of the most widely used frameworks for deep learning. The release of Tensorflow 2 marks a step change in the product development, with a central focus on ease of use for all users, from beginner to advanced level. This course is intended for both users who are completely new to Tensorflow, as well as users with experience in Tensorflow 1.x.

The prerequisite knowledge required in order to be successful in this course is proficiency in the python programming language, (this course uses python 3), knowledge of general machine learning concepts (such as overfitting/underfitting, supervised learning tasks, validation, regularisation and model selection), and a working knowledge of the field of deep learning, including typical model architectures (MLP/feedforward and convolutional neural networks), activation functions, output layers, and optimisation.

Read more

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Introduction to TensorFlow

Module 1 • 2 hours to complete

Module details

TensorFlow is one of the most popular libraries for deep learning, and it's widely used today amongst researchers and professionals at all levels. In this week, you will get started with using TensorFlow on the Coursera platform and familiarise yourself with the course structure. You will also learn about some helpful resources when developing deep learning models in TensorFlow, including Google Colab. This week is really about getting everything set up, ready for diving into TensorFlow in the following week of the course.

What's included

14 videos 8 readings 1 discussion prompt 1 ungraded lab 1 plugin

Show info about module content

The Sequential model API

Module 2 • 6 hours to complete

Module details

There are multiple ways to build and apply deep learning models in TensorFlow, from high-level, quick and easy-to-use APIs, to low-level operations. In this week you will learn to use the high-level Keras API for quickly building, training, evaluating and predicting from deep learning models. The programming assignment for this week will give you the opportunity to put all this into practice and develop an image classification model from scratch on the MNIST dataset of handwritten images.

What's included

13 videos 2 quizzes 1 programming assignment 8 ungraded labs

Show info about module content

Validation, regularisation and callbacks

Module 3 • 6 hours to complete

Module details

Model validation and selection is an essential part of developing any machine learning model development to help prevent overfitting and improve generalisation. In this week you will learn how to use a validation dataset in a training run and apply regularisation techniques to your model. You will also learn how to use callbacks to monitor performance and perform actions according to specified criteria. In the programming assignment for this week you will put model validation and regularisation into practice on the well-known Iris dataset.

What's included

11 videos 1 quiz 1 programming assignment 8 ungraded labs

Show info about module content

Saving and loading models

Module 4 • 6 hours to complete

Module details

As part of your deep learning model development, you will need to be able to save and load TensorFlow models, possibly according to certain criteria you want to specify. In this week you will learn how to use callbacks to save models, manual saving and loading, and options that are available when saving models, including saving weights only. In addition, you will practice loading and using pre-trained deep learning models. In the programming assignment for this week you will write flexible model saving and loading implementations for a model trained on satellite images.

What's included

12 videos 1 programming assignment 8 ungraded labs

Show info about module content

Capstone Project

Module 5 • 3 hours to complete

Module details

In this course you have learned an end-to-end workflow for developing deep learning models in Tensorflow. The Capstone Project gives you the opportunity to bring all of your knowledge together to develop a deep learning classifier on a labelled image dataset of street view house numbers.

What's included

2 videos · 1 peer review · 1 ungraded lab · 1 plugin

Show info about module content

Instructor

Instructor ratings **4.9** ★ (178 ratings)

Dr Kevin Webster
Imperial College London
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Learner since 2018

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Jennifer J.
Learner since 2020

"I directly applied the concepts and skills I learned from my courses to an exciting new project at work."

★ 4.9 563 reviews

5 stars	90.94%
4 stars	7.46%
3 stars	0.53%

2 stars	0.17%
1 star	0.88%

AJ
★ 5 · Reviewed on Sep 10, 2020

Excellent course with thorough practical exercises and most of all I love Kevin Webster teaching style.. Definitely a go to course for anyone who has some basic Deep Learning knowlegde.

AA
★ 5 · Reviewed on Mar 18, 2021

Provided clear and useful insight into TensorFlow 2. Before the course I had read many of the TF2 guides and tutorials. This course helped solidify my understanding of core TF concepts.

MW
★ 5 · Reviewed on Jul 23, 2023

Awesome course for the students who wanted to start the TensorFlow. Instructors are best, explained the topic in a simple word using appropriate practical examples.

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