



## Overview

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Course Info

# Week 1

Custom and Distributed Training with TensorFlow

## Week 1

Discuss the topic here.

9 threads · Last post a month ago

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## Differentiation and Gradients



This week, you will get a detailed look at the fundamental building blocks of TensorFlow - tensor objects. For example, you will be able to describe the difference between eager mode and graph mode in TensorFlow, and explain why eager mode is very user friendly for you as a developer. You will also use TensorFlow tools to calculate gradients so that you don't have to look for your old calculus textbooks next time you need to get a gradient!

[^](#) [Less](#)

## Learning Objectives

- Use various TensorFlow functions to create tensor objects
- Describe the difference between graph-based execution and eager execution in TensorFlow
- Use TensorFlow's GradientTape to calculate derivatives of loss functions

[^](#) [Less](#)

## A conversation with Andrew Ng

[▶](#) **Video:** A conversation with Andrew Ng: Overview of course 2 4 min[Resume](#)[📖](#) **Reading:** Connect with your mentors and fellow learners on Slack! 10 min

## Tensor Basics

[▶](#) **Video:** What is a tensor? 4 min[▶](#) **Video:** Creating tensors in code 6 min[▶](#) **Video:** Math operations with tensors 1 min[▶](#) **Video:** Basic Tensors code walkthrough 4 min[📁](#) **Lab:** Basic Tensors 1h

## Working with Tensors in Eager Mode

[▶](#) **Video:** Broadcasting, operator overloading and Numpy compatibility 6 min[▶](#) **Video:** Evaluating variables and changing data types 4 min

## Gradient Tape

[▶](#) **Video:** Gradient Tape 4 min[📖](#) **Reading:** Reference: CNN for visual recognition 10 min[▶](#) **Video:** Gradient Descent using Gradient Tape 4 min

▶ **Video:** Calculate gradients on higher order functions 4 min

▶ **Video:** Persistent=true and higher order gradients 2 min

▶ **Video:** Gradient Tape basics code walkthrough 3 min

📄 **Lab:** Gradient Tape Basics 1h

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## Quiz

📋 **Quiz:** Tensors and Gradient Tape 6 questions Due Mar 15, 1:59 AM CDT

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## Assignment: Basic Tensor Operations

🔗 **Programming Assignment:** Basic Tensor Operations 1h Due Mar 15, 1:59 AM CDT

