



Overview

Week 1

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Grades

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Course Info

Week 1

Generative Deep Learning with TensorFlow

Week 1

Discuss the topic here.

7 threads · Last post 3 days ago

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Week 1: Style Transfer



This week, you will learn how to extract the content of an image (such as a swan), and the style of a painting (such as cubist, or impressionist), and combine the content and style into a new image. This is called neural style transfer, and you'll learn how to extract these kinds of features using transfer learning.

Less

Learning Objectives

- Describe the ways total variation loss ensures spatial continuity and smoothness
- Explore the benefits of fast neural style transfer compared to traditional DCNN
- Define Style Transfer
- Gain intuition about the Gram Matrix
- Describe the steps required to calculate loss

Less

Style Transfer Intro

Video: Welcome to Course 4 6 min

Resume

Reading: Connect with your mentors and fellow learners on Slack! 10 min

Video: Style Transfer Intro 3 min

Reading: Reference: A Neural Algorithm of Artistic Style 10 min

Video: Style Transfer Conceptual Overview 4 min

Reading: Reference: Perceptual Losses for Real-Time Style Transfer and Super-Resolution 10 min

Video: Pre-Processing Inputs 2 min

Video: Extracting Style and Content Features 6 min

Reading: Reference: Visualizing and Understanding Convolutional Networks 10 min

Video: Total Loss and Content Loss 3 min

Video: Style Loss 3 min

Reading: Reference: numpy.einsum 10 min

Video: Update the Generated Image 1 min

Video: Optional - Gram Matrix 4 min

Video: Optional - Einstein Notation 6 min

Video: Optional - Einsum in Code 1 min


Lab: Neural Style Transfer 1h


Total Variation Loss


 **Video:** Total Variation Loss 1 min

 **Lab:** Neural Style Transfer Part 2 1h

Fast Neural Style Transfer

 **Video:** Fast Neural Style Transfer 1 min

 **Reading:** Reference: Exploring the structure of a real-time, arbitrary neural artistic stylization network 10 min

 **Lab:** Fast Neural Style Transfer 1h

Week 1 Quiz: Style Transfer

 **Quiz:** Style Transfer 6 questions Due Mar 22, 1:59 AM CDT

Assignment: Style Transfer

 **Programming Assignment:** Style Transfer Dog 1h Due Mar 22, 1:59 AM CDT

