Week 4

Advanced Computer Vision with TensorFlow

Week 4

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Visualization and Interpretability

This week, you'll learn about the importance of model interpretability, which is the understanding of how your model arrives at its decisions. You'll also implement class activation maps, saliency maps, and gradient-weighted class activation maps to identify which parts of an image are being used by your model to make its predictions. You'll also see an example of how visualizing a model's intermediate layer activations can help to improve the design of a famous network, AlexNet.

Less

Learning Objectives

- Explain why model interpretation is important
- Calculate class activation maps to visualize the parts of the image that a model uses to make its predictions.
- Calculate saliency maps to visualize the parts of the image that a model uses to make its predictions.
- Implement Gradient-weighted Class Activation Mapping (GradCAM) to identify parts of the image that are important in a model's predictions.
- Describe how visualization can help to improve a model's design

Less

Intro to Visualization and Interpretation

Video: Why Interpretation Matters? 6 min — Resume

Video: Class Activation Maps 3 min

Video: Fashion MNIST Class Activation Map code walkthrough 4 min

Lab: Class Activation Maps with Fashion MNIST (Lab #1) 1h

Lab: Class Activation Maps "Cats vs Dogs" (Lab #2) 1h

Saliency

Video: Saliency 5 min

Lab: Saliency Maps (Lab #3) 1h

Gradients and Class Activation Maps

Video: GradCAM 5 min

Reading: Reference: GradCam 10 min

Lab: GradCAM (Lab #4) 1h

Improving a model with Interpretation

Video: ZFNet 5 min

Reading: Reference: ZFNet 10 min

Week 4 Quiz: Visualization and Interpretation

Quiz: Visualization and Interpretation 5 questions Due Apr 5, 1:59 AM CDT

Assignment: Cats vs Dogs Saliency Maps

Programming Assignment: Cats vs Dogs Saliency Maps 1h Due Apr 5, 1:59 AM CDT

Course Resources

Reading: References 10 min

Acknowledgments

Reading: Acknowledgments 10 min