Week 1

Machine Learning Modeling Pipelines in Production

Week 1

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Week 1: Neural Architecture Search

Robert Crowe

Learn how to effectively search for the best model that will scale for various serving needs while constraining model complexity and hardware requirements.

Learning Objectives

- Recognize the cases where Neural Architecture Search is the appropriate tool to find the right model architecture.
- Distinguish between trainable parameters and hyperparameters
- Judge when manual parameter search does not scale well
- Identify search spaces and summarize the best strategies to navigate this space to find optimal architectures.
- Differentiate the advantages and disadvantages AutoML for different use cases
- Carry out different metric calculations to assess AutoML efficacy
- Identify some cloud AutoML offerings and recognize their strengths and weaknesses

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A conversation with Andrew Ng, Robert Crowe and Laurence Moroney

Video: Course Overview 2 min — Resume

Hyperparameter tuning: searching for the best architecture

Video: Hyperparameter Tuning 3 min

Video: Keras Autotuner Demo 6 min

Ungraded External Tool: Join us on Discourse! 1h

Practice Quiz: Hyperparameter Tuning and Neural Architecture Search 3 questions

Lab: Intro to Keras Tuner 1h

Lab: Hyperparameter Tuning and Model Training with TFX 1h

AutoML

Video: Intro to AutoML 5 min

Video: Understanding Search Spaces 2 min

Video: Search Strategies 4 min

Reading: Neural Architecture Search 3 min

Video: Measuring AutoML Efficacy 3 min

Video: AutoML on the Cloud 8 min

Reading: AutoML 3 min

Video: Assignment Setup 1 min

Practice Quiz: AutoML 9 questions

Ungraded External Tool: A Tour of Qwiklabs and Google Cloud 45 min

Graded External Tool: Classify Images of Clouds in the Cloud with AutoML Vision 2h Due Dec 20, 2:59 AM EST

Lecture Notes (Optional)

Ungraded External Tool: Lecture Notes W1 5 min