



# Week 2

Machine Learning Modeling Pipelines in Production

Overview

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Course Info

Week 2

Discuss the topic here.

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4 threads · Last post 3 months ago

Week 2: Model Resource Management Techniques

Robert Crowe

Learn how to optimize and manage the compute, storage, and I/O resources your model needs in production environments during its entire lifecycle.

Learning Objectives

- Identify how data dimensionality affects model performance
- Illustrate the curse of dimensionality and how it relates to model performance
- Use manual dimensionality reduction to mitigate performance bottlenecks
- Determine the applicability of algorithmic dimensionality reduction techniques to improve model performance and reduce overall computational costs
- Use Principal Component Analysis to identify and remove redundant dimensions in high-dimensional data sets
- Integrate model resource management techniques to optimize resources and performance
- Differentiate the uses of quantization and pruning to optimize model resources and requirements without affecting efficiency and accuracy

Show Less

Dimensionality Reduction

Video: Dimensionality Effect on Performance


8 min

Resume

- Video: Curse of Dimensionality 9 min
- Video: Curse of Dimensionality: an Example 4 min
- Video: Manual Dimensionality Reduction 5 min
- Video: Manual Dimensionality Reduction: Case Study 7 min
- Lab: Manual Feature Engineering 30 min
- Video: Algorithmic Dimensionality Reduction 2 min
- Video: Principal Components Analysis 7 min
- Video: Other Techniques 7 min
- Reading: Dimensionality Reduction Techniques 3 min
- Practice Quiz: Dimensionality Reduction 6 questions
- Lab: Algorithmic Dimensionality Reduction 40 min


Quantization and Pruning

- Video: Mobile, IoT, and Similar Use Cases 7 min
- Video: Benefits and Process of Quantization 8 min
- Video: Post Training Quantization 4 min
- Video: Quantization Aware Training 4 min
- Reading: Quantization 3 min
- Video: Pruning 12 min
- Reading: Pruning 3 min
- Practice Quiz: Quantization and Pruning 7 questions

 **Lab:** Quantization and Pruning <sup>1h</sup>

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### Lecture Notes (Optional)

 **Ungraded External Tool:** Lecture Notes W2 <sup>5 min</sup>