Santa Clara University

COEN 240

Machine Learning Midterm Review

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Exam Process

- Arrive on time.
- May 1 (Thursday), During Lecture time
- Rules:
  - Open-slides, open-notes and open-book test
  - **No devices are allowed**
  - No talking or discussion during exam

Review Guide

- 1: Introduction
  - Commonly used unsupervised learning algorithms
  - Slide28: supervised learning – regression examples
  - Slides 31-32: unsupervised learning and examples
  - Slides 48-51: underfitting and overfitting

- 2: Linear Algebra Review
  - Slide 6, 7: how to get a vector which has unit norm
    - L2-norm of vector v
    - v / L2-norm of v
  - Multiplying a vector by a matrix

Review Guide (2)

- 03: Linear Regression
  - Slide 11-13: the cost function used in linear regression
    - See linear regression note– least squares
  - Slide 14: least squares solution
- 04: K-means Clustering
  - Slides 4-13:
    - The objective function
    - k clusters
- 07: Gradient Descent &Logistic Regression
  - Slide 17-22: sigmoid function
  - Slide 23-26: decision boundary
  - slide 27-31: cost function
  - Slide 33-37: updated θ using gradient descent
  - Slide 38-42: multi-class classification

Review Guide (3)

- 08: Neural networks
  - Slides 26, 27: how often to update weight
  - Slide 29: epoch
  - A fully connected layer
  - Given a simple neural network, how to calculate the total number of parameters (w/ or w/o biases)