Midterm Review

Midterm Review

CST8504 Midterm October 15th 09:00 – 10:30 am

- 1 hour test, 1.5-hour time limit
- Closed book, no Internet
- Part multiple choice Scantron Quiz (bring pencils, erasers)
- Part written answers on paper (bring pencils/pens erasers)
- Covers material so far in course
- Study guide:
  - Review lectures slides/notebooks and textbook chapters
  - Review hybrid activities
  - Review labs and assignment

Some Highlights

- The following slides are examples of topics we have covered
- They act as a basis for our current discussion, but midterm material is not limited to these slides
- These slides are not a complete listing of midterm material

Machine Learning

Types of Machine Learning

- Supervised
    - Regression
    - Classification
- Unsupervised
- Reinforcement Learning

Python Ecosystem

- Python modules
- Python packages
- pip
- Virtual environments
- Anaconda Distribution
- conda
- IPython
- Jupyter Notebooks

Python Primer

See the CST8504_02_Python_Primer slides

Notable mentions:

- Comprehensions
- Unpacking
- Slicing

Python Primer outline

See the CST8504_02_Python Primer slides

1. Python basics
    1. Triple-quoted strings, etc
    2. Defining functions, parameters
    3. Importing, etc
    4. Lists, Tuples
    5. Pass by reference
2. Sequences: Lists, Tuples
3. Dictionaries, Sets
4. Slicing, Two dimensions, etc

Numpy and Pandas

See the CST8504_03_Numpy_Pandas slides

1. Numpy arrays
    1. Kinds of data
    2. Why arrays vs lists
    3. Creating arrays
    4. Array attributes
    5. Operations on Arrays
    6. Array slicing, reshaping, transposing
2. Pandas
    1. Series
    2. Dataframes

Matplotlib

Hybrid Activity 1: Matplotlib

https://jakevdp.github.io/PythonDataScienceHandbook/04.01-simple-line-plots.html

https://jakevdp.github.io/PythonDataScienceHandbook/04.02-simple-scatter-plots.html

Sample Written Questions

Write a Python list comprehension that evaluates to a list containing the squares of the integers from 0 to 99 (3 marks).

Write a Python set comprehension that evaluates to a set containing the integers from 0 to 99, except for 80 to 89, that is {0,1,2,…,78,79,90,91,…,99}. (3 marks)

Sample Questions cont'd

Given a two-dimensional NumPy array called myArray, write expressions that will return the following: (6 marks)

- The first three columns of the first three rows
- The first three columns
- Columns 3 and 7

In your own words, give two reasons why Python is a popular language for use in AI and Data Science. (3 marks)