**Python\_Lesson5: Python Programming**

Please don't forget to submit your feedback after the class. This helps a lot in increasing effectiveness of the course. Use the following link to submit your feedback: <https://docs.google.com/forms/d/1AkrJ-_5ZHozJf_mCg92hsXAEMYKzo3CaM4ebm0GJSmU/edit?ts=5b74fe0e>

**Lesson Overview:**

In this lesson, we will focus on regression and clustering techniques

a. Regression Techniques

- Linear Regression

- Logistic Regression

b. Clustering Technique

- k-means clustering

**Use Case Description:**

1. Linear Regression

3. k-means clustering

4. k-means clustering with Scikit-Learn and pandas

**Programming elements:**

Linear Regression and k-means clustering

**Source Code:**

<https://umkc.box.com/s/duuj1ygqenuyqll99j44virb5kf1q178>

**In class programming:**

1. Create linear regression model for the dataset at below link using NumPy. Plot the model using matplotlib.

<https://umkc.box.com/s/dtqud5vqttj2zsk6yd618yjds9zvxq6c>

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\*\* In the dataset data pairs  
 X = national unemployment rate for adult males  
 Y = national unemployment rate for adult females

2. The sample dataset below is 6 objects with two variable(X,Y). your task is to cluster this dataset into Two cluster (k=2)

|  |  |  |
| --- | --- | --- |
| subject | X | Y |
| 1 | 1.0 | 1.0 |
| 2 | 1.5 | 2.0 |
| 3 | 3.0 | 4.0 |
| 4 | 5.0 | 7.0 |
| 5 | 3.5 | 5.0 |
| 6 | 4.5 | 5.0 |

**ICP Submission Guidelines (for In Class students):**

1. ICP Submission is in pairs of two students.

2. Once completed, must be presented to TA or Instructor before the completion of the class

3. Submission after class is considered as a late submission. (Check the late submission policy in the syllabus)

4. ICP Code with brief explanation should be pushed to GitHub. Submit GitHub link through the Feedback Form: <https://goo.gl/forms/HEJyYaiUi3MKXKP22>

**Online Submission Guidelines (for Online students):**

1. Submit your source code and documentation to GitHub and represent the work through wiki page properly (submit your screenshots as well. The screenshot should have both the code and the output)

2. Comment your code appropriately

3. Video Submission (2 – 3 min video showing the demo of the ICP, with a brief voice over on the code explanation)

4. Submission after class is considered as a late submission. (Check the late submission policy in the syllabus)

5. Use the following Google link to submit your ICP # (GitHub wiki page link for ICP #): https://docs.google.com/forms/d/1AkrJ-\_5ZHozJf\_mCg92hsXAEMYKzo3CaM4ebm0GJSmU/edit?ts=5b74fe0e

**Evaluation Criteria:**

1. Completeness of Features

2. Code Quality (<https://en.wikipedia.org/wiki/Best_coding_practices>)

3. Time

4. Feedback Submission

**Note:** *Cheating, plagiarism, disruptive behavior and other forms of unacceptable conduct are subject to strong sanctions in accordance with university policy. See detailed description of university policy at the following URL:* [*https://catalog.umkc.edu/special-notices/academic-honesty/*](https://catalog.umkc.edu/special-notices/academic-honesty/)