

Assignment 5

In this module, you will write one Python notebook to create required outputs. You will also participate in module 5 forum discussion.

You will use markdown cells and be creative of summarizing/commenting your notebook. You will also add detailed comments in your Python code (using “#” or triple quote signs)

Notebook 1: Anomaly Detection

Watch the lecture videos and continue working on the anomaly detection function.

Video 11 describes the requirements.

Requirements:

1. Read in data from anomaly_detection.txt and assign the data to an array (x).
2. Create a function – anomaly_detection() to take an array as an input and output the result in the following format.

```
anomaly_detection(x)
```

```
Remove 160.00 from the list because it's 4.19 times of standard deviation of the list without it.  
160.00 is removed from the list!
```

```
Remove 55.00 from the list because it's 3.61 times of standard deviation of the list without it.  
55.00 is removed from the list!
```

```
Remove 131.86 from the list because it's 3.10 times of standard deviation of the list without it.  
131.86 is removed from the list!
```

```
No more anomaly is detected!
```

Anomaly: Assume D is a dataset. X is a member of D. Mu is the mean of D **without X**, and STD is the standard deviation of **D without X**. If the difference of X and Mu is larger than 3xSTD, we say X is an anomaly. We then remove X from D. We will iteratively search D for anomaly until no more outliers are found.

Submissions:

You will export your notebook to both .html and .py formats. You will submit the following 2 files to Blackboard. In your html file, you should **include all the outputs** of your python script without error messages.

1. Firstname_Lastname_Anomaly.html
2. Firstname_Lastname_Anomaly.py

Attachments:

Anomaly_detection.txt :

The data file that you will read in

Sample_output.png:

a sample output of the function you will create