

AICS Assignment #05

Assignment Details:

- **Due:** August 21, 11:59 PM ET
- **Points:** 10 points
- **Requirements:** Data import, cleaning, analysis, visualization, model training

Code Guidance for Students:

python

```
# Assignment starter code
def main():
    # 1. Data Import and Cleaning
    detector = UnsupervisedMalwareAnomalyDetector()
    detector.load_and_prepare_data('dataset_malwares.csv')

    # 2. Model Training
    detector.isolation_forest_detection()
    detector.kmeans_outlier_detection()
    detector.one_class_svm_detection()

    # 3. Evaluation
    evaluation_results = detector.create_ground_truth_evaluation()

    # 4. Visualization
    detector.create_comprehensive_visualizations()

    # 5. Analysis
    report = detector.generate_security_report()

    return detector, report
```

Submission Requirements:

1. Jupyter notebook with all three algorithms implemented
2. Comparison of algorithm performance
3. Visualization of results
4. Written analysis of findings
5. Security recommendations based on detected anomalies