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**Assignment of**

Computer Vision

**Topic**

Image features Detection and Matching

Image Classification

**Submitted to**

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**Submitted By**

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PhD-CS

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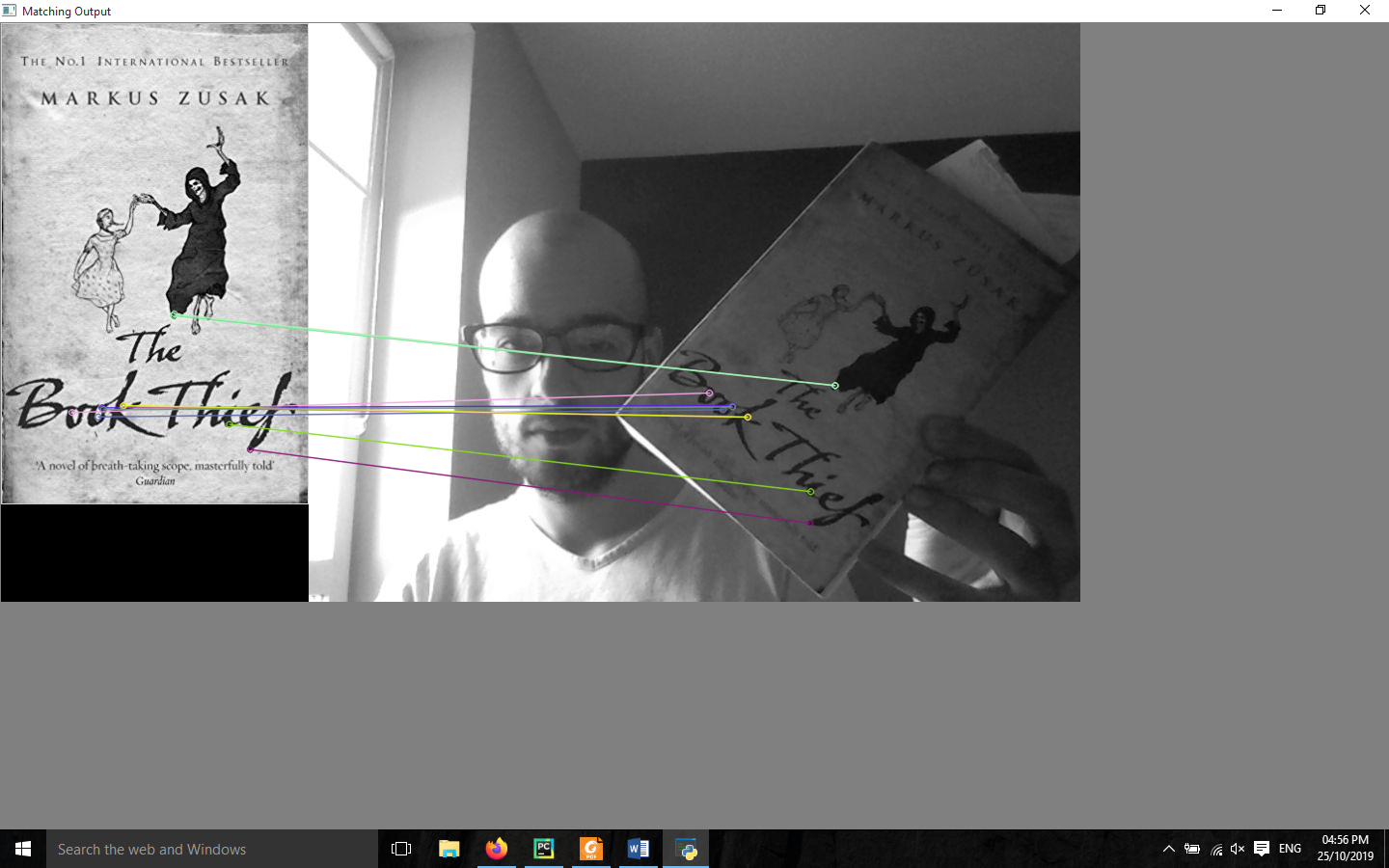
**School of Electrical Engineering and Computer Science**

**National University of Science and Technology**

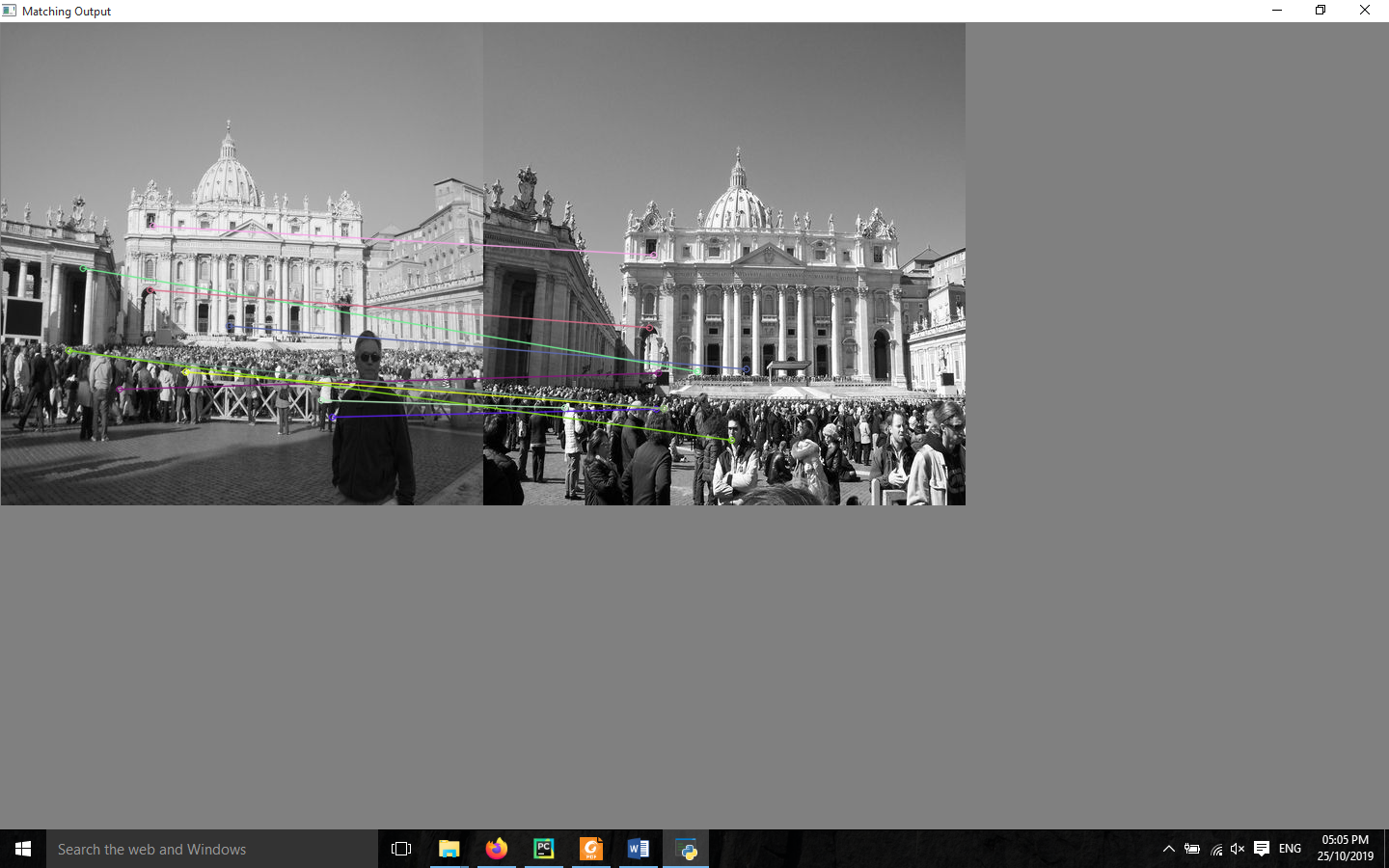
**Islamabad**

Task-1: Image Feature Extraction and Matching

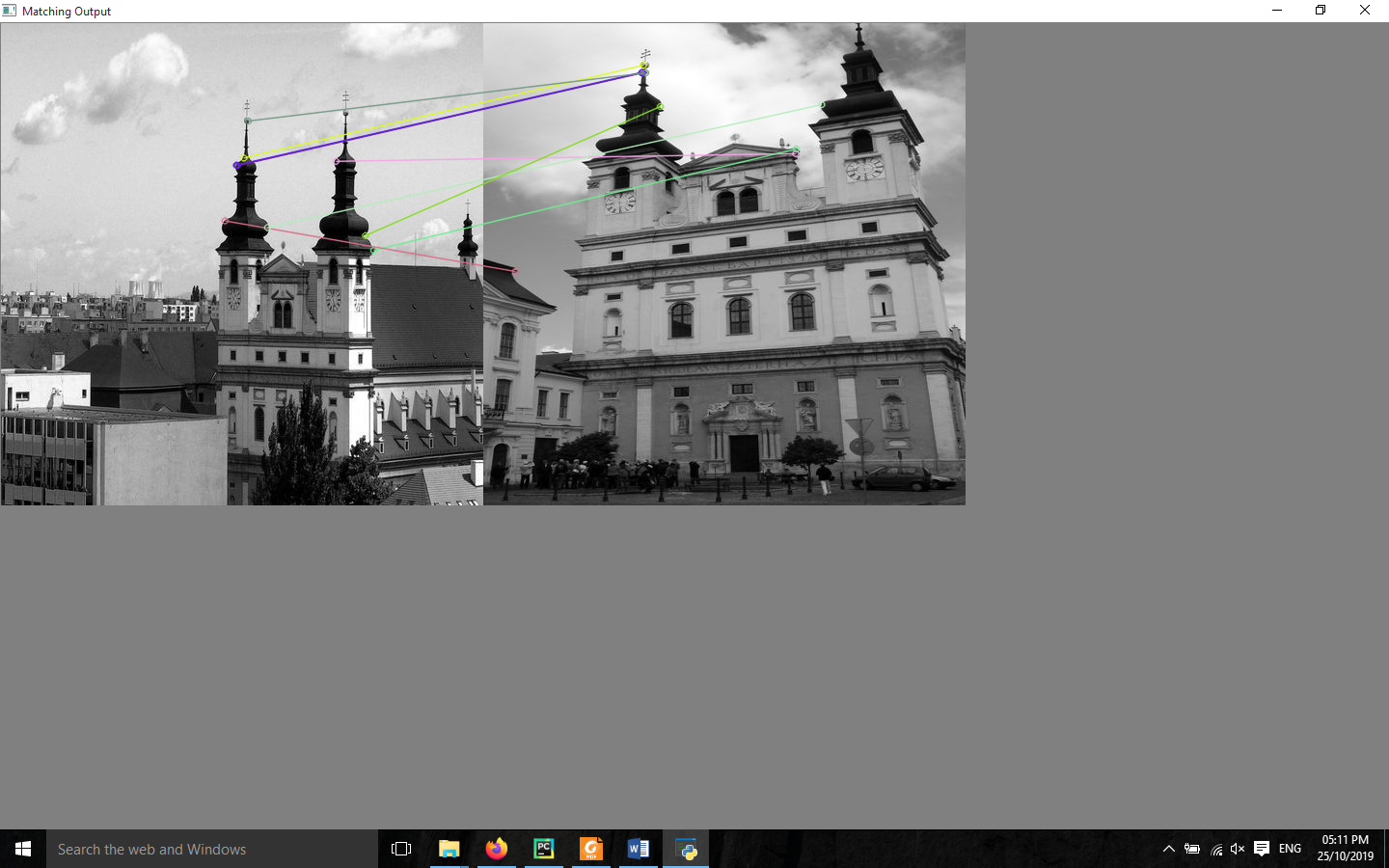
* Oriented FAST and Rotated BRIEF (ORB)
  + Set 1



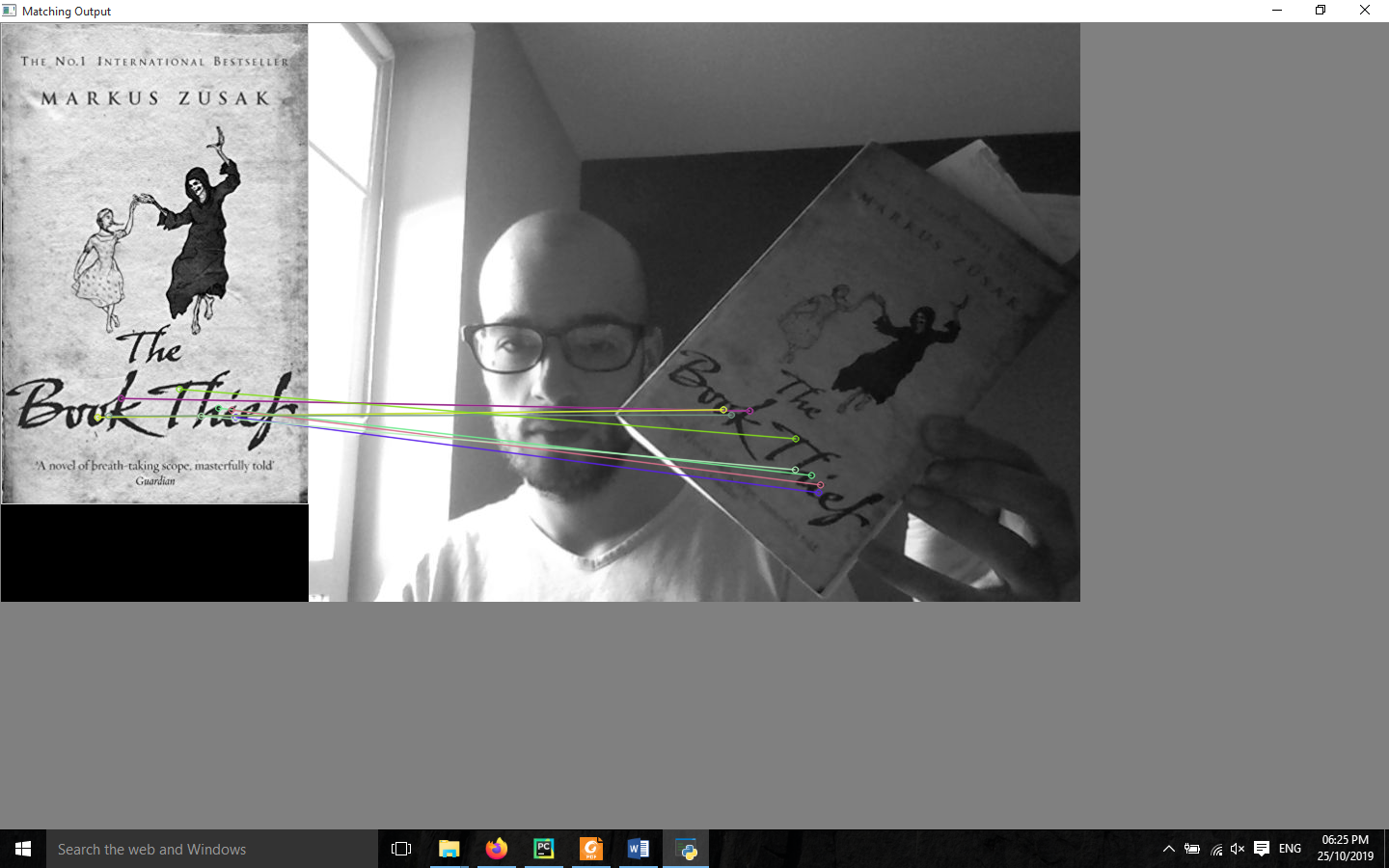
* + Set 2



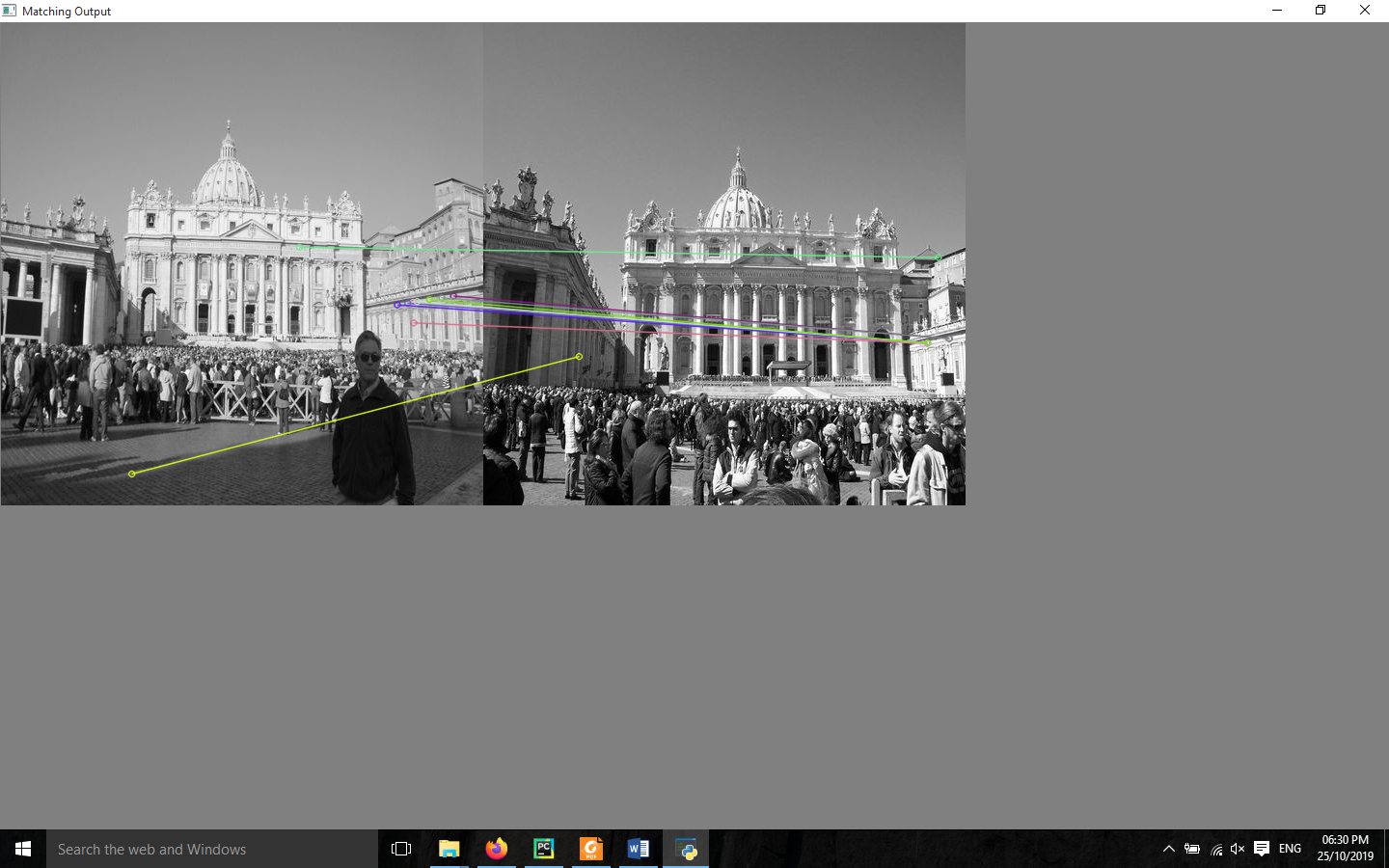
* + Set 3

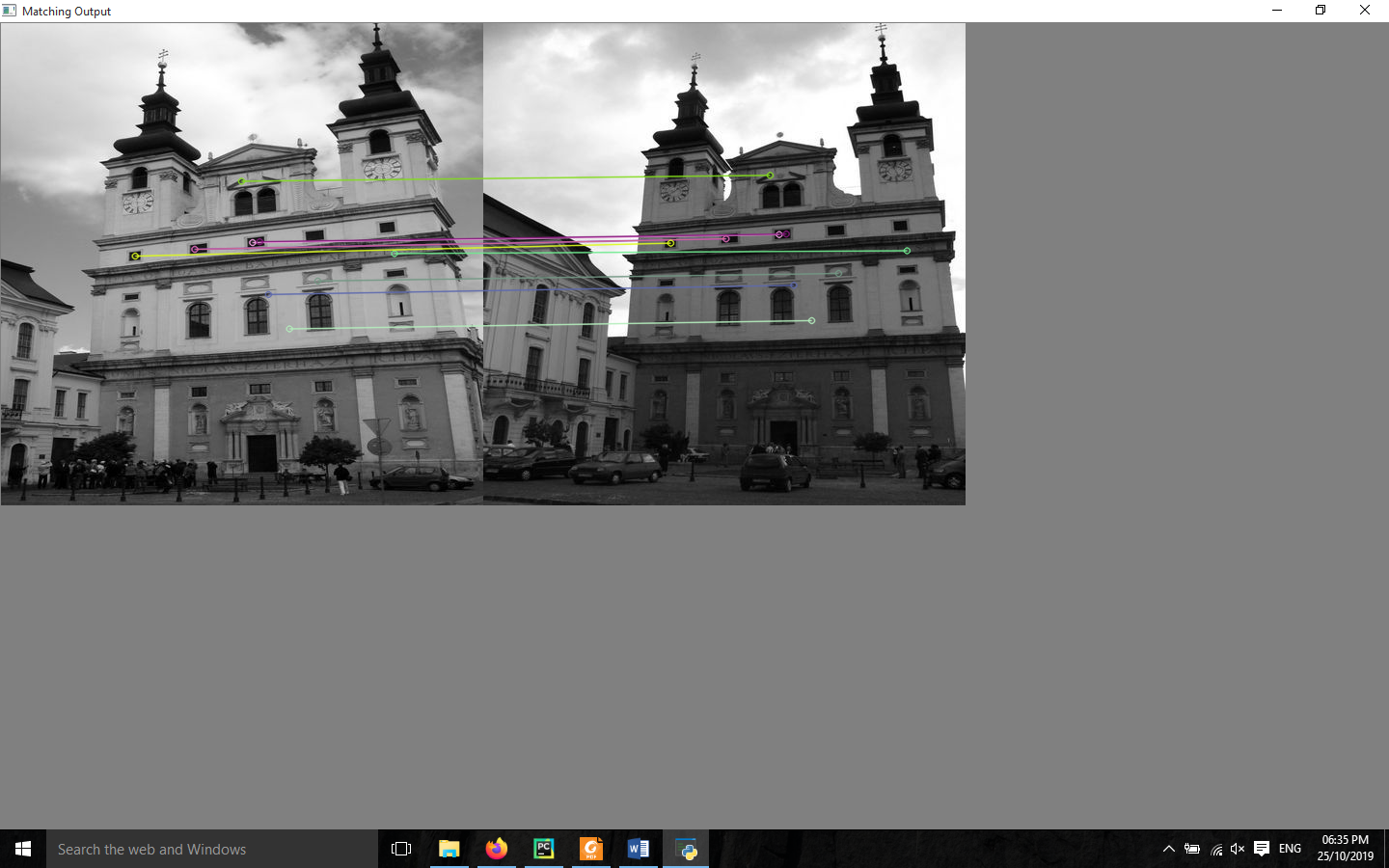
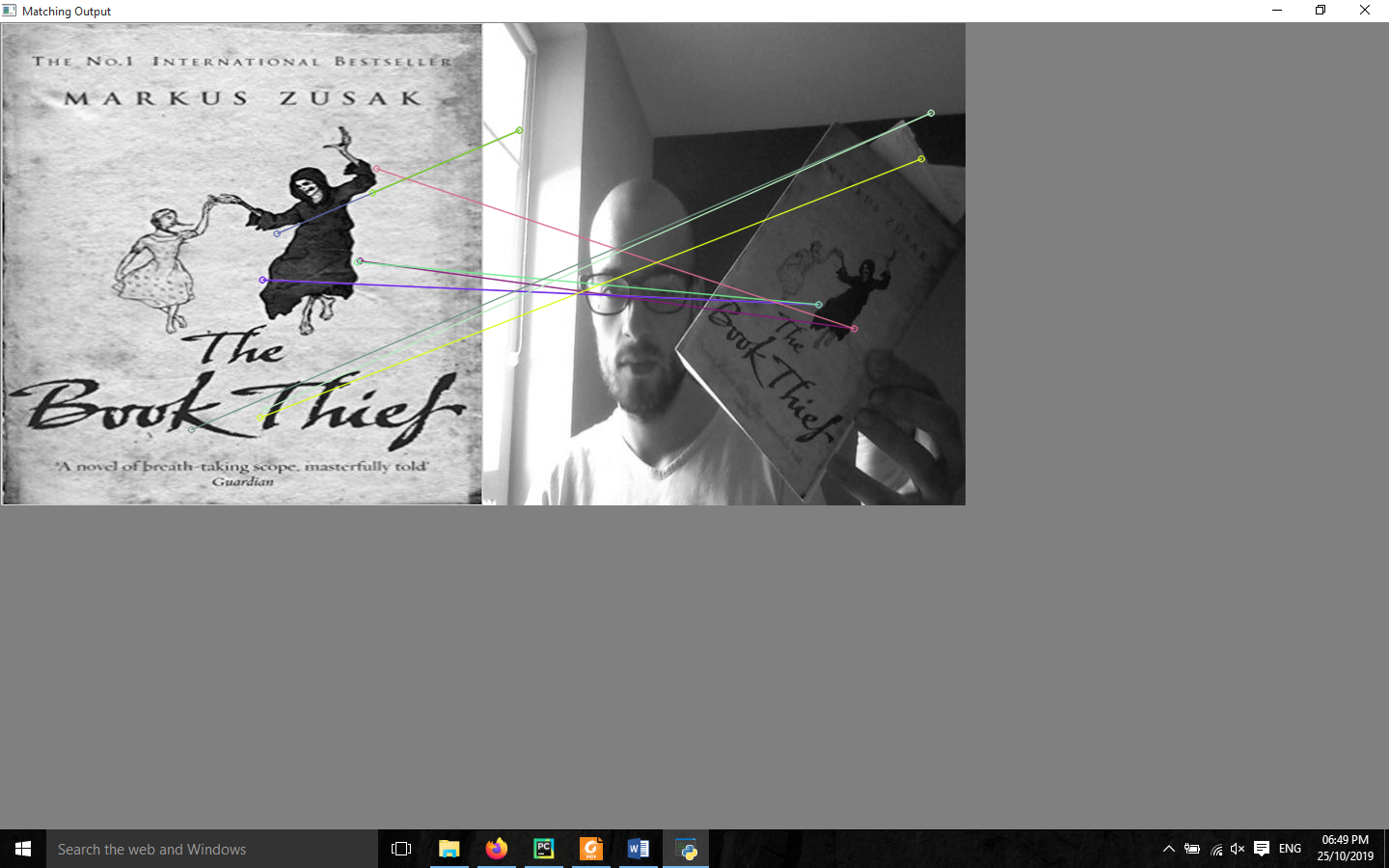


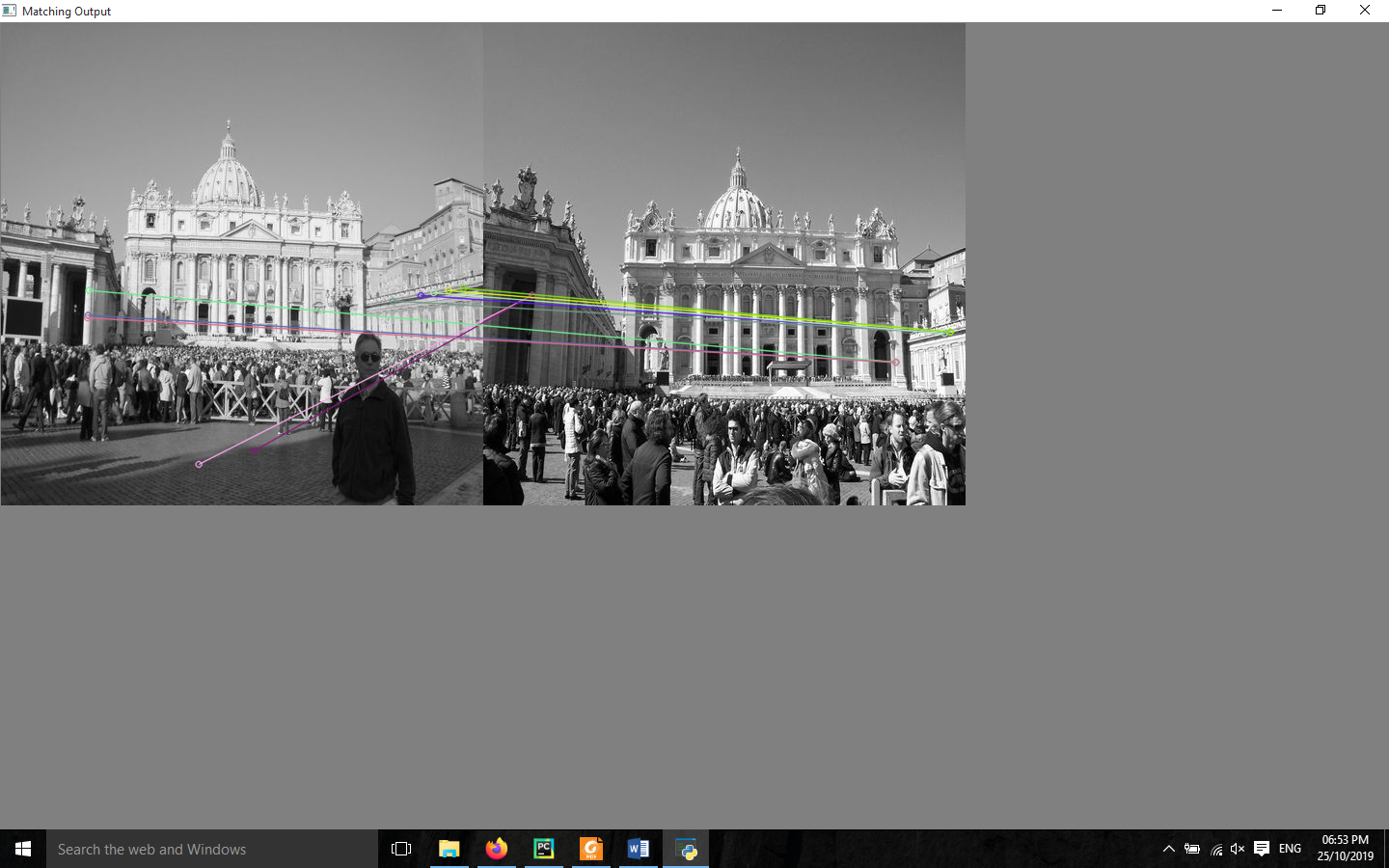
* Scale Invariant Feature Transform(SIFT)
  + Set 1



* + Set 2



* + Set 3
* Speeded-Up Robust Features (SURF)
  + Set 1
  + Set 2



* + Set 3

Task 2: Human Classification / Detection

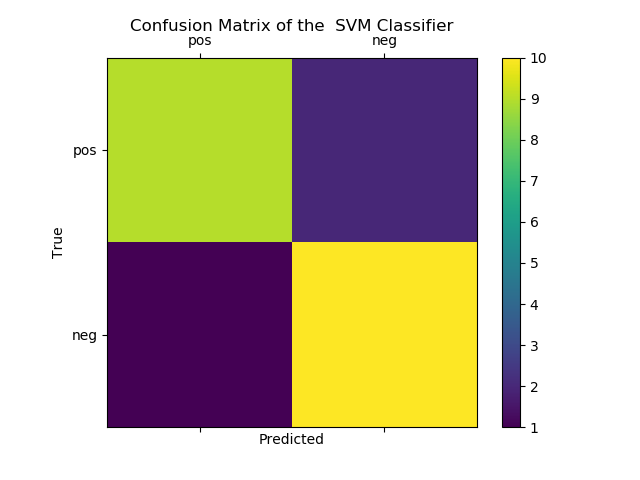
**i. Quantitative performance measures i.e. F1 Score, Accuracy, True Positive Rate, and False Positive Rates of both classifiers.**

**Results for smaller dataset**

**SVM Classifier**

* **F1 score**
  + 0.8633540372670807
* **Accuracy** 
  + 0.8636363636363636
* **Confusion Matrix (True positive rate , True negative rate, False positive rate, False negative rate**
  + [[ 9 2]

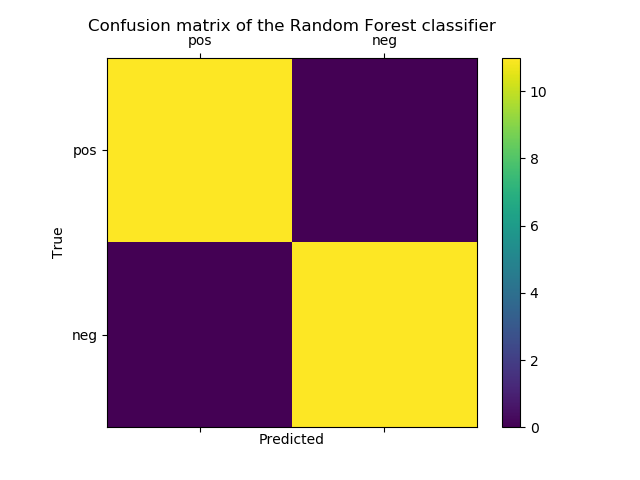
[1 10]]



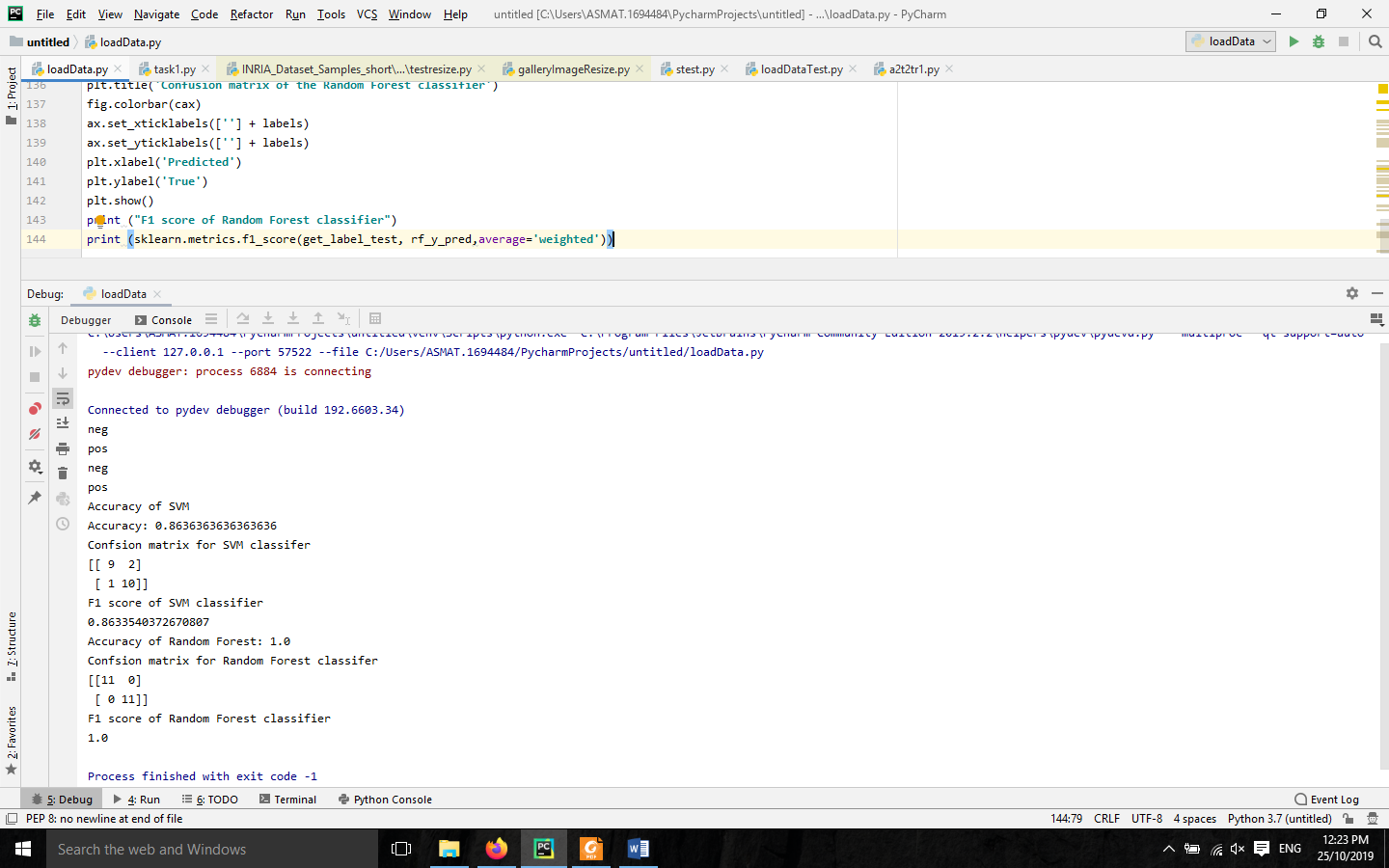
**Random Forest Classifier**

* **F1 score**
  + 1.0
* **Accuracy**
  + 1.0
* **Confusion Matrix (True positive rate , True negative rate, False positive rate, False negative rate**
  + [[11 0]

[0 11]]



* **Classifier IDE snippet of obtained results**



**ii. Qualitative results i.e. a few of the correctly classified images**

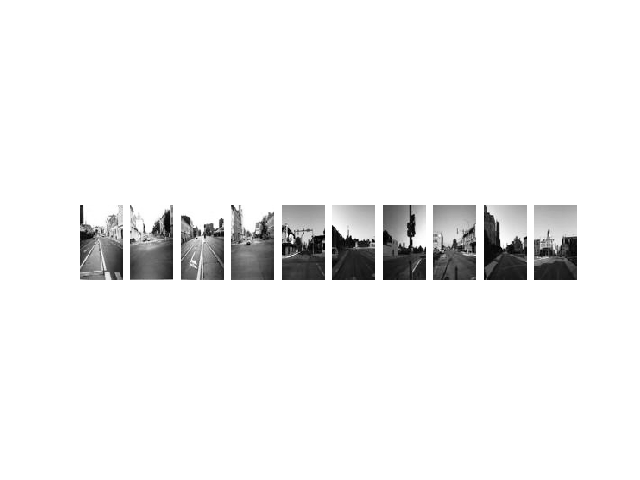
**Training Images**

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**Corresponding Training Labels**

Training label: ['neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg']

**Testing Images**

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**Corresponding Testing labels**

Test label: ['neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg', 'neg']

**IDE run results**

