

# F14-16601: Machine Learning

## Homework 6 Report

Dawei Wang  
daweiwan@andrew.cmu.edu

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### Code of Conduct Declaration

- I did not receive any help whatsoever from anyone in solving this assignment.
- I did not give any help whatsoever to anyone in solving this assignment.

Selected  $K = 169$ . See below for the original image and the segmentation result.

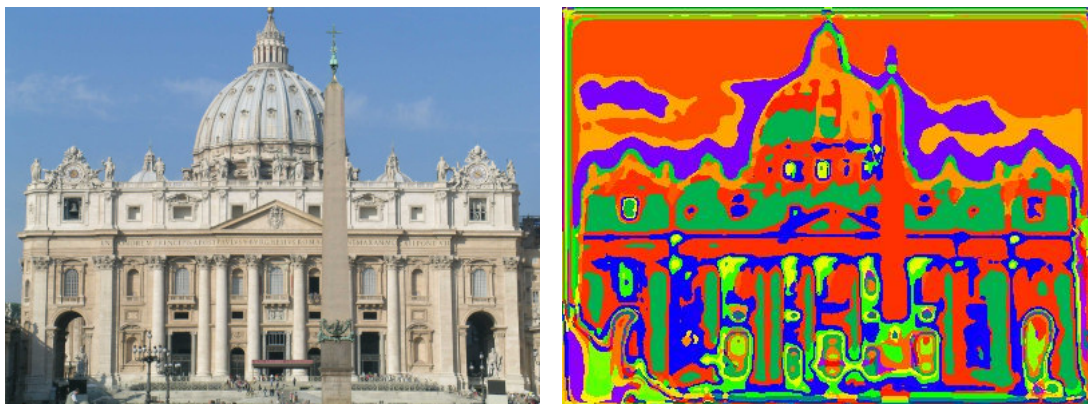


Figure 1: St. Peter's Basilica and its Segmentation Result (400x300)

Rationale:

- I have chosen  $K = 169$  because  $169 = 13^2$ , where 13 is a prime number.
- I have chosen St. Peter's Basilica because I travelled to there last year.

Performance:

Table 1: Elapsed Time

Script	Feature Extraction	K-means	#Datapoints
<code>computeDictionary.m</code>	173 seconds	$\sim 20$ seconds	$\sim 21,000$ (3%)
<code>segmentation.m</code>	26.71 seconds	1.049 seconds	120,000