Computational Photography
Assignment #6
Panorama

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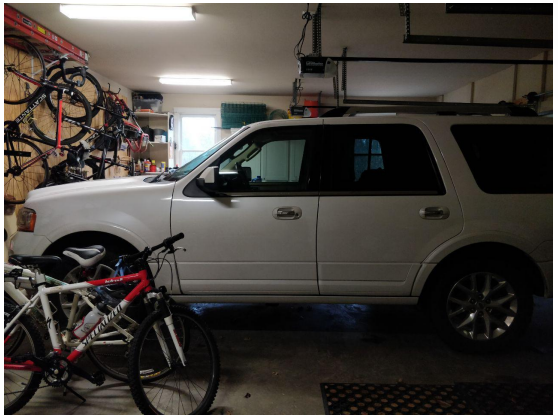
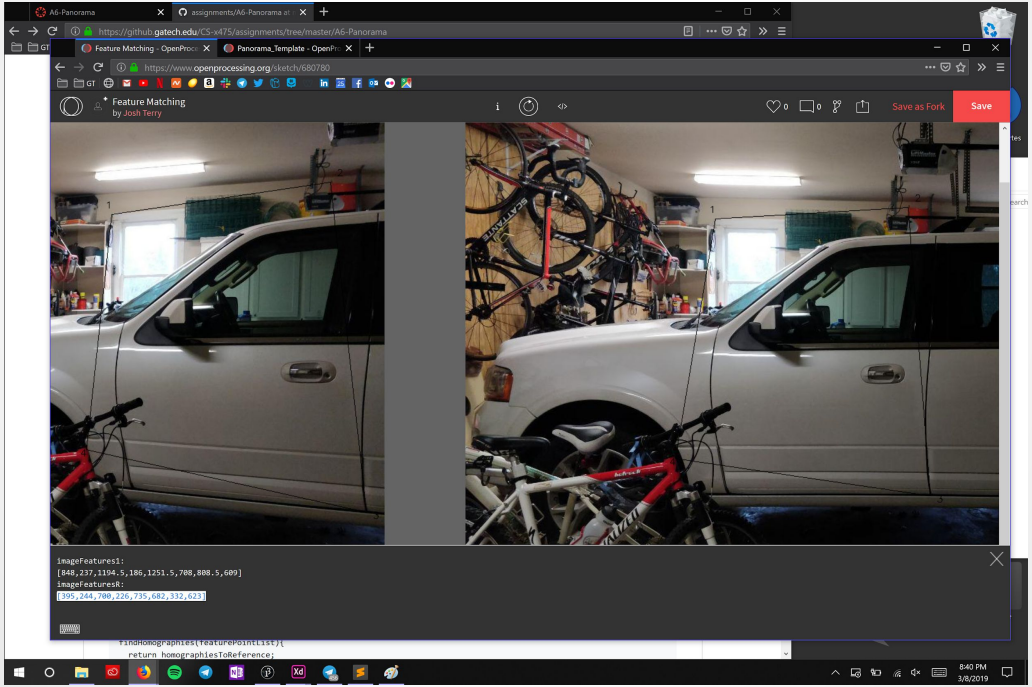
Setup and Panorama Type

- Handheld oneplus 5 phone camera
- Camera rotated from one stationary position

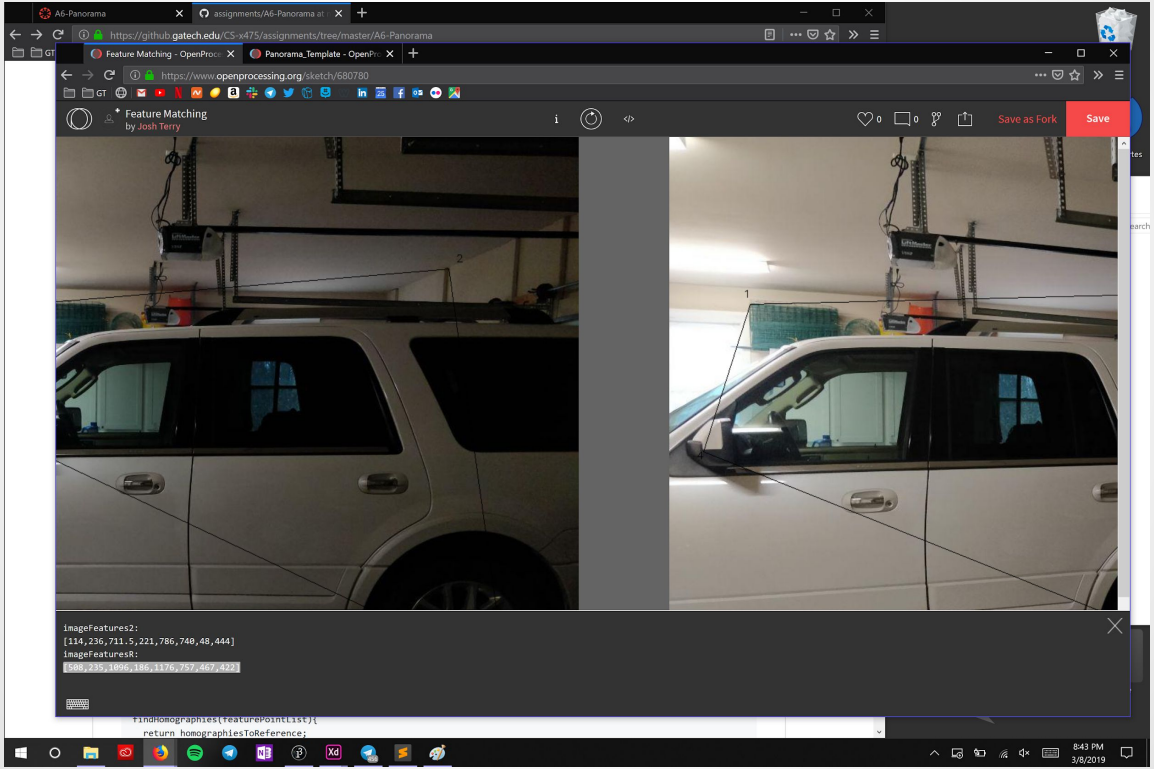
Original Input Images



Screenshot of Left and Reference Image Feature Pairs



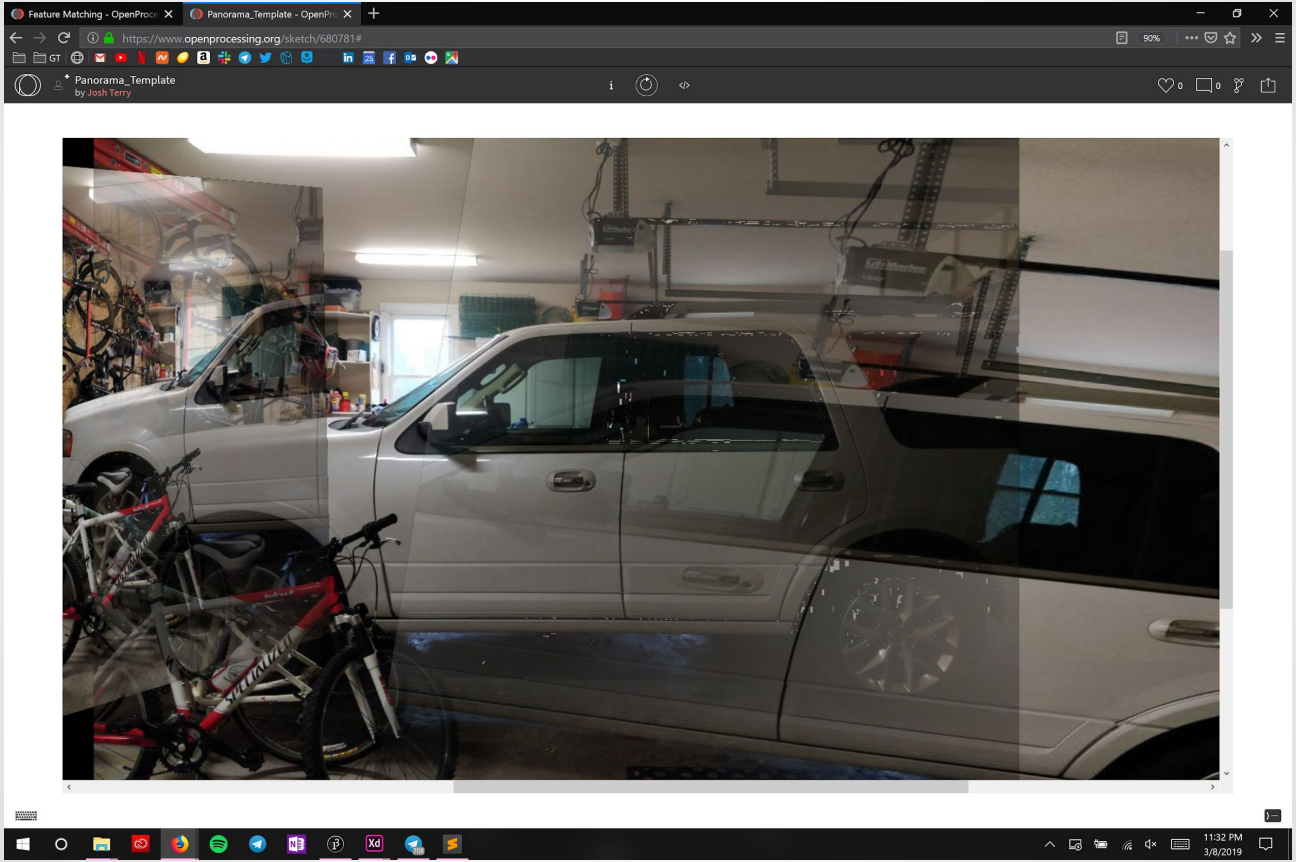
Screenshot of Right and Reference Image Feature Pairs



Discussion & Analysis

- I selected features based on unique colorations within the scene, corners, and combinations thereof. For instance, in the Left and Reference image feature pairs, I opted to select the corner of a green bundle of wire and the corner of a bright orange bucket as features, as they stood apart from the rest of the scene.

Panorama Result



Discussion & Analysis

- I would have taken photos of a more feature-rich subject matter than my dad's garage. I would have liked to take my nicer camera out for photos of cars parked at a roadside, for more colorful and interesting subject matter and photos. Additionally, I might experiment with more varieties of movement than rotation.

Question

Explain why rHc is in the form of:

$$rHc = \begin{bmatrix} 1 & 0 & x \\ 0 & 1 & y \\ 0 & 0 & 1 \end{bmatrix}$$

- rHc is in homogeneous coordinates so that it might more intuitively and efficiently translate other matrices and vectors, both for humans and computers.

Resources

- https://piazza.com/class/jqfay5yvmaa3kk?cid=161
- https://docs.opencv.org/2.4/modules/imgproc/doc/geometric_transformations.html
- https://github.gatech.edu/CS-x475/assignments/tree/master/A6-Panorama
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