CS445 Final Project Proposal

Project Name: Focus Stacking.

Motivation: The motivation comes from the interests in photography and the usefulness of this tool that it can literally be used in photography post editings. The topic is also a good hands-on experience of what we learned from the course, such as using laplacian pyramids or other image blending techniques. The learning goal here is to discover how to blend photos with different depth-of-field and to potentially improve the quality of the result from a recent paper.

Milestones:

- 11/02: Proposal Due.
- 11/07: Search and compare different focus stacking methods.
- 11/14: Be able to load images and align images.
- 11/21: Using gradient method (laplacian pyramids) to blend images.
- 12/04: Refine results and write report.
- 12/09: Final Project Due.

Evaluation:

- Numerically: We can use some numerical evaluation such as the standard deviation of the image to evaluate the “focusness” of an image.
- Visually: The results can be visually compared with the results from Photoshop photo stacking functionality, or compared with state of the art results if we found one.

Resources: Since it’s an image processing application and does not require any deep learning training process, CPUs are hopefully enough to meet the requirements.

Group and work distribution:
Ideally we want to divide the work into half.

- Zongnan Bao (zb3):
    - Search different focus stacking methods.
    - Refine focus stacking methods.
- Han Chen (hanc3):
    - Parameter tuning.
    - Implement focus stacking methods.