CS4363/5363 Computer Vision

Spring 2021

Lab 2

Due Friday, February 12

For this lab you will implement a technique called *lucky imaging*, which is very commonly used in astronomy. Three datasets are provided, each containing 1000 low-quality astronomical images. Your goal is produce the best possible image combining the individual images in each dataset. Code is provided to read the data and also to compute the average image in the dataset, which should be used as a baseline (that is, your results should be better than this simple baseline).

You should implement the following:

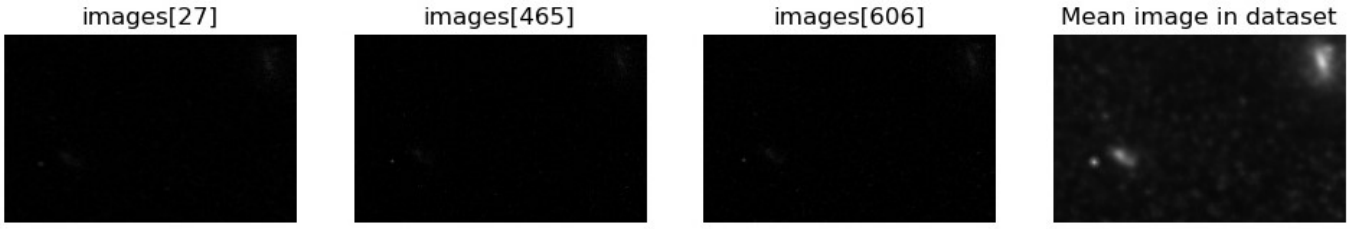
1. Compute average image in dataset (provided)
2. Align images in dataset
3. Select only the best images in dataset
4. Perform intensity transformations (gamma, log, sigmoid, histogram equalization)

Then you must experiment with combinations of these operations to determine what works best. This is an open ended project, your grade will be based on the quality of your final results and on the ideas you implemented and tried.

Submission

Submit a report including (at least) the following items:

1. Problem description
2. Algorithms implemented
3. Experiments. What did you try? What worked, what didn't. Include images showing your results. Focus on quality more that quantity (don't include hundreds of images just to show you did a lot of work).
4. Conclusions. What did you learn from this assignment?
5. Appendix: Source code



Randomly chosen images and average of images in dataset