

DIP Project Proposal

Pratik Kamble

Technical details

- Project ID: **40**
- Project title: *Computationally efficient image deblurring using low rank image approximation and its GPU implementation*
- Original Paper: Chang et. al
- Project topics: Deblurring and GPU Implementation
- Team Members:
- Pratik Kamble (**20161135**)
- GitHub Link: low-rank-deblurring

Overview

- This project essentially covers a computationally efficient technique for reduction of blur caused by handshakes in images captured by mobile devices. This technique uses a short-exposure or a low-exposure image that is captured at the same time a normal or auto-exposure image is captured.
- The short-exposure image is enhanced by utilizing low rank image approximation of the auto-exposure image without requiring any user specified parameters.
- Based on the three quantitative measures of image quality, it is shown that this technique outperforms similar techniques used for image deblurring while it also offers computational efficiency. A GPU implementation of this technique is also reported.
- If constraints permit, a comparison between the methods mentioned in the paper and naive deblurring methods may also be presented.

Timeline

Date	Task
Sept 29th	Proposal Submission
Oct (first week)	Read through paper and setup testing and analysis
<i>Oct (second week)</i>	<i>Exams</i>
Oct (third week)	Collect additional deblurring method data
Oct (last week)	Implement efficient low rank algorithm and test
Nov 10th	Midway checkpoint
Nov (last week)	Extend to GPU implementation
Nov 29th	Project Presentation

End goals

- Compare and analyze the efficiency and differences in output of various deblurring techniques
- Present and expand *low rank image approximation*
- Attempt a GPU implementation and compare performance gains.