

GEORGE MASON UNIVERSITY

Blind Deconvolution

Proposal Document

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1 Summary of Project Requirements

1.1 Mission Requirements

- The device will be code written in Matlab that will undo the convolution of an image $f(x, y)$ with a blurring impulse function $h(x, y)$

1.2 Operational Requirements

- The input to the code will be an image, which will be represented as an $m \times n \times 3$ array, which will account for the spatial components as well RGB channels of the image.
- The output will be another image that approximates the "true" image before the blurring function, as well as the statistical features of the Bayesian method that was used.

The goal of our project is to replicate the results found in [1] in order to reconstruct an image that has been blurred using a known blurring function. The blurred image will be represented as the 2D convolution of the true image, $f(x, y)$, with a blurring function $h(x, y)$.

- The original image will be obtained when the blurring function is a Guassian.
- The output will be some code written in Matlab that implements this method, and can be run on a standard laptop.

References

- [1] W. H. Richardson, "Bayesian-based iterative method of image restoration," *Journal of the Optical Society of America*, vol. 62, January 1972.