TITLE SLIDE

Hello, we are Gloria Diederich, Alyson Grassi, and Molly Nichols.

We have chosen to discuss image deblurring and its relationship to matrix theory and to practical applications. In particular, we will focus on a topic of practical interest in real-world applications – blind image deconvolution.

OUTLINE SLIDE

We’ll first walk through a quick introduction to the problem and why it is significant, along with introducing some terminology. We’ll then move into more details about the model of the problem. Finally, we’ll show some results using Matlab and our conclusions.

WHAT IS IMAGE DEBLURRING SLIDE

First we ask – what is image deblurring? Bascially, it is essentially what it sounds like. Given some degraded or blurred image, we would like to recover as much information as possible about the original image and restore that quality to it.

Images have become so ubiquitous, for personal, public, and scientific purposes. Think about how useful images are for things like security footage, medical screening, remote sensing, astronomical exploration…the list goes on. Of course, we’d like the best possible quality images for these applications, but there are numerous issues that could occur, such as motion blur, incorrect system calibration, unexpected environmental effects, transmission errors, and many more. Image deblurring can help us achieve the necessary image quality for serious applications like these.

WHAT IS BLIND DECONVOLUTION SLIDE

Of course the most straightforward approach would be if we knew what happened to degrade our image – we could simply reverse the process to restore it. But what about the much more realistic situation for most real world applications – we DON’T know what happened to our image, perhaps multiple effects are at play, and perhaps in different magnitudes. That is a harder, but very relevant, problem. This problem – “deconvolution” or deblurring of an image without knowledge of the blurring process – is known as blind deconvolution.