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Glenn Sidle* (sidleg@duq.edu), 440 College Hall, Department of Math and Computer Science, Duquesne University, Pittsburgh, PA 15282, and **Katie Heaps, Josh Koslosky** and **Stacey Levine**. *Fusing Images with Multiple Degradations Using Gaussian Mixture Models*. Preliminary report.

In recent years, many image processing tasks have been solved by finding optimal sparse image representations in a (possibly redundant) dictionary. Yu, Sapiro, and Mallat have shown that related representations can be found by estimating image patches using Gaussian Mixture Models (GMMs). In this talk we demonstrate how the GMM approach can be applied to solve the image fusion problem, focusing on noisy/blurry pairs, image zooming, and exposure bracketing. In addition, we will discuss how spatially adaptive smoothing can be used to enhance results depending on varying noise levels and geometric features such as edges and smooth regions. (Received August 06, 2012)