A Unified Tight-frame Approach for Missing Data Recovery in Images

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In many practical problems in image processing, the observed data sets are often incomplete in the sense that features of interest in the image are missing partially or corrupted by noise. The recovery of missing data from incomplete data is an essential part of any image processing procedures whether the final image is utilized for visual interpretation or for automatic analysis. In this talk, we present our tight-frame algorithm for missing data recovery. We start with an introduction of tight-frames. Then we illustrate how to apply the idea to different image processing applications such as: inpainting, impulse noise removal, super-resolution image reconstruction, video enhancement, and parallel MRI.