Evaluation of super-resolution gains for hyperspectral mosaic imagers

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Hyperspectral image sensors enhance possibilities for detection and classification in many vision applications. Current developments include hyperspectral mosaic sensors: a single sensor consisting of a spatial mosaic with a separate spectral response per pixel within each mosaic block. Image reconstruction for hyperspectral mosaic sensors requires a demosaicking process to estimate missing pixel values and thus recover lost spatial information. Using single-frame or multi-frame super-resolution demosaicking based on assumptions regarding the spatial, spectral and temporal correlations in the imagery, the spatial resolution can be significantly enhanced. We will present an automated, objective TOD (Triangular Orientation Discrimination) method which allows for a directly interpretable, application-specific quantification of this improvement in spatial resolution. This TOD method can be used to assess the gain of resolution versus possible violations of the assumptions made on spatial, spectral and temporal correlations in the imagery.