Processing Multispectral/Hyperspectral Video

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Abstract

The use of video systems to monitor a region provides the potential for significant advances for several applications. Video data allows targets to be tracked over time which is critical for tasks such as learning target movement patterns and establishing connections between targets. Urban environments, however, often contain multiple targets moving in close proximity against complex backgrounds. In these environments target characteristics that can be recovered from standard video sequences such as target shape and RGB will often lead to ambiguities during tracking. In addition, target occlusion, shading, and changing motion patterns can complicate maintaining correct target tracks. The availability of multispectral and hyperspectral imaging sensors that can capture several frames per second provides the opportunity to address many of the difficulties faced by conventional tracking systems. In particular, the high-dimensionality of hyperspectral data has been shown to allow the discrimination of low-contrast targets in complex environments over a wide range of conditions. We present results over a wide range of imagery to demonstrate the potential of using multispectral and hyperspectral data for video processing.