

AUTOMATIC MIXED PIXEL CLASSIFICATION (AMPC): UNSUPERVISED MIXED PIXEL CLASSIFICATION

The automatic mixed pixel classification (AMPC) considered in this chapter is fully computer automated and can be implemented to automatically detect and classify targets with no human intervention. Like the automatic subpixel detection discussed in Chapters 5-6 AMPC can be also categorized into unsupervised mixed pixel classification and anomaly classification. The former classifies mixed pixels in an unsupervised manner, where the required unsupervised target knowledge is the *a posteriori* target information generated directly from the image data as noted in Chapter 5. By contrast, the latter extends anomaly detection to anomaly classification, in which case the detected anomalies can be classified with no need of unsupervised target knowledge. Depending upon availability of *a priori* target knowledge two versions of unsupervised MPC, referred to as desired target detection and classification algorithm (DTDCA) and automatic target detection and classification algorithm (ATDCA), are presented in this chapter. The DTDCA is applied to a situation that there is knowledge about specific targets to be classified, whereas ATDCA can be used to classify targets of interest present in an unknown image scene without *a priori* target knowledge. As a consequence, they result in different applications.