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Zhaohui Guo* (annegzh@math.ucla.edu), University of California Los Angeles, Department of Mathematics, Box 951555, 520 Portola Plaza, Los Angeles, CA 90095, and **Stanley Osher** (sjo@math.ucla.edu), University of California Los Angeles, Department of Mathematics, Box 951555, 520 Portola Plaza, Los Angeles, CA 90095. *Template Matching via l_1 regularization with Application to Hyperspectral Imaging.*

Detecting and identifying targets or objects that are present in hyperspectral ground images are of great interest. Applications include land and environmental monitoring, mining, military, civil search-and-rescue operations, and so on. We propose and analyze an extremely simple and efficient idea for template matching based on l_1 minimization. The designed algorithm can be applied in hyperspectral classification, target detection and clustering. Synthetic image data and real hyperspectral image (HSI) data are used to assess the performance, with comparisons to other approaches, e.g. spectral angle map (SAM), adaptive coherence estimator (ACE), generalized-likelihood ratio test (GLRT) and matched filter. We demonstrate that this algorithm achieves excellent results with both high speed and accuracy by using Bregman iteration. (Received September 18, 2010)