1163-65-1433   **Yifei Lou***, University of Texas at Dallas, FO35, 800 West Campbell Road, Richardson, TX
              75080. *Blind Hyperspectral Unmixing Based on Graph Total Variation Regularization.*

Remote sensing data from hyperspectral cameras suffer from limited spatial resolution, in which a single pixel of a hyperspectral image may contain information from several materials in the field of view. Blind hyperspectral image unmixing is the process of identifying the pure spectra of individual materials (i.e., endmembers) and their proportions (i.e., abundances) at each pixel. In this paper, we propose a novel blind hyperspectral unmixing model based on the graph total variation (gTV) regularization, which can be solved efficiently by the alternating direction method of multipliers (ADMM). To further alleviate the computational cost, we apply the Nyström method to approximate a fully-connected graph by a small subset of sampled points. Furthermore, we adopt the Merriman-Bence-Osher (MBO) scheme to solve the gTV-involved subproblem in ADMM by decomposing a grayscale image into a bit-wise form. A variety of numerical experiments on synthetic and real hyperspectral images are conducted, showcasing the potential of the proposed method in terms of identification accuracy and computational efficiency. (Received September 15, 2020)