

NONLINEAR UNMIXING WITH MULTIPLE REFLECTION FOR HYPERSPECTRAL REMOTE SENSING IMAGERY

Shih-Min Syu¹, Hsuan Ren²

*Centre for Space and Remote Sensing Research, National Central University
No.300, Zhongli City, Taoyuan 32001, Taiwan*

¹Tel: 886-3-422-7151 ext 57673, Email: victor790510@gmail.com

²Tel: 886-3-4227151 ext 57666, E-mail:hren@csrsr.ncu.edu.tw

ABSTRACT: In hyperspectral images, pixels contain more than one materials. Linear mixture model is the most studied, but it does not consider interaction term. Nonlinear models have recently shown interesting properties for spectral unmixing. This paper considers a generalized bilinear model (GBM) recently introduced for unmixing hyperspectral images. The GBM considers the interaction between different materials which is a nonlinear model that accounts for the presence of second order interactions between two different endmembers. But it does not consider the interaction between same materials. The positivity and sum-to-one constraints for the abundances are ensured by the proposed algorithms. The performance of the resulting unmixing strategy is evaluated via simulations conducted on synthetic and real data.

KEYWORDS: Generalized Bilinear Model, Hyperspectral Images, Nonlinear Unmixing.