

Tanakorn Sritarapipat 2011: Fusion of Hyperspectral and Multispectral Images. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Teerasit Kasetkasem, Ph.D. 67 pages.

The objective of this thesis is to develop an image fusion algorithm for combining a low-resolution hyperspectral image with a high-resolution multispectral image to obtain a high spatial resolution hyperspectral image. To achieve this goal, we investigate the relationship between low-resolution hyperspectral data and high-resolution multispectral data, and the spatial correlation of the corresponding data from neighboring pixels. The proposed algorithm is based on a statistical model and employs the maximum *a posteriori* (MAP) estimator for enhancing the spatial and spectral resolutions. The Huber Markov random field (Huber-MRF) is used to preserve the spatial correlation in the fused data. A closed-form solution to find the fused hyperspectral images is also derived here. Experiments results with hyperspectral and multispectral images acquired from Small Multi-Mission Satellite (SMMS) (HJ-1A) show that the proposed fusion algorithm works effectively in fusing hyperspectral and multispectral images.

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Student's signature

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Thesis Advisor's signature