

THE EVALUATION AND OPTIMIZATION OF THE ENDMEMBERS EXTRACTED FROM PIXEL PURITY INDEX (PPI)

Milad NIROUMAND JADIDI ^{a*}, Mahmood Reza SAHEBI ^b and Mojtaba JANNATI ^a

^a M.Sc. Student in Remote Sensing Eng., ^b Assistant Professor,

Dept. of Remote Sensing Eng., Geomatics Engineering Faculty, K. N. Toosi University of Technology,
ValiAsr Street, Mirdamad Cross, P.C. 19967-15433, Tehran, Iran, Fax: (+98 21)88786213

E-mail: (niroumand, m.jannati)@sina.kntu.ac.ir, sahebi@kntu.ac.ir

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Abstract: The extraction of sub-pixel information plays a major role in accurate estimation of land cover due to the mixed pixels problem. In this regard, Linear Spectral Mixture Model (LSMM) could be considered as a common method in estimating the fractions of different classes within a pixel. The accuracy of this model is significantly related to the identification of pure pixels. Thus, different methods have been developed for identifying pure pixels. Pixel Purity Index (PPI) is known as a prominent geometric index in this area. Large number of selected pixels, their poor quality and also unclassified nature of the output pixels could be considered as major limitations of this algorithm. In this study, clustering of image pixels based on the pure pixels' mask is used in order to clustering of pixels obtained from the PPI. Likewise, thresholding on the PPI results is proposed to choose the most pure pixels. Then, the accuracy of the initial pure pixels obtained from the PPI and also the selected pixels based on the thresholding is evaluated by determining the number of under/over-shoot pixels and the RMSE of LSMM results. According to the results, the number of under/over-shoot pixels is decreased considerably by increasing the threshold value applied on the PPI image and is determined less than 5 percent of total image pixels.