

Lab Color Space based Rice Yield Prediction using Low Altitude UAV Field Image

Md Nasim Reza¹ Inseop Na² Sunwook Baek¹ In Lee³ Kyeonghwan Lee^{1,2*}

¹Dept. of Rural & Biosystems Engineering, Chonnam National University, Gwangju, Korea

²Agricultural Robotics & Automation Research Center, Chonnam National University, Gwangju, Korea

³Agricultural Research Division, Jeollanamdo Agricultural Research & Extension Services, Naju, Korea

Abstract

Prediction of rice yield during a growing season would be very helpful to magnify rice yield as it also allows better farm practices to maximize yield with greater profit and lesser costs. UAV imagery based automatic detection of rice can be a relevant solution for early prediction of yield. So, we propose an image processing technique to predict rice yield using low altitude UAV images. We proposed L*a*b* color space based image segmentation algorithm. All images were captured using UAV mounted RGB camera. The proposed algorithm was developed to find out rice grain area from the image background. We took RGB image and applied filter to remove noise and converted RGB image to L*a*b* color space. All color information contain in both a* and b* layers and by using k-mean clustering classification of these colors were executed. Variation between two colors can be measured and labelling of pixels was completed by cluster index. Image was finally segmented using color. The proposed method showed that rice grain could be segmented and we can recognize rice grains from the UAV images. We can analyze grain areas and by estimating area and volume we could predict rice yield.

Keywords

Rice yield prediction, segmentation, K-mean clustering, UAV

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* 교신저자 : 이경환(khlee@jnu.ac.kr)