Announcing the Final Examination of Xiangling Kong for the degree of Doctor of Philosophy

Time & Location: June 26, 2019 at 10:00 AM in ENG 2 202a
Title: Color-Ratio Based Strawberry Plant Localization and Nutrition Deficiency Detection

In recent years, precision agriculture has become popular anticipating to partially meet the needs of an ever-growing population with limited resources. Plant localization and nutrition deficiency detection are two important tasks in precision agriculture. In this dissertation, these two tasks are studied by using a new color-ratio (Câ€“R) index technique. Firstly, a low cost and light scene invariant approach is proposed to detect green and yellow leaves based on the color-ratio (Câ€“R) indices. A plant localization approach is then developed using the relative pixel relationships of adjacent plants. Secondly, the Sobel operator and morphology techniques are applied to segment the target strawberry leaf from a field image. The characterized color for a specific nutrition deficiency is detected by the Câ€“R indices. The pattern of the detected color on the leaf is then examined to determine the nutrition deficiency. The proposed approaches are validated in a commercial strawberry farm.

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Approved for distribution by Yunjun Xu, Committee Chair, on June 11, 2019.

The public is welcome to attend.