Detection of Outdoor Lighting Variability for Machine Vision-Based Precision Agriculture

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Summary:

In order to develop an environmentally adaptive segmentation algorithm (EASA) capable of adapting to changes in lighting conditions, it is important to characterize lighting variability and to be able to detect and track such variability so that adaptation to lighting change can occur in real-time operation of the EASA. Thus, illuminance and chromaticity measurements of daylight were taken across several day-long periods to determine how light varies as a function of time and time of day. Additionally, a series of images were acquired and later processed with the reduced dimension clustering (RDC) algorithm which was effective in detecting and tracking changes in the correlated color temperature (CCT) of the light.

Keywords:

machine vision, color measurement, sunlight, segmentation, local sensor-based precision agriculture

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