

# Calibration of Range Camera's Depth Value Depending on Color Differences

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**Abstract:** The range camera measures the distance between objects and a sensor using IR light in real time based on Time-Of-Flight (TOF) technology. However, range accuracy is highly affected by reflection properties of an object such as textures and colors. Therefore, it is essential to test and correct the influence of reflection properties for applications requiring high accuracy such as robotics and measurement systems. Most of previous researches concentrated on the analysis of accuracy for different grey levels pattern, not for multi-colored one. In this paper, calibration of the effect by color on range accuracy was conducted. Multi-colored target with various scales of intensity was used to analyze the tendency of range uncertainty regarding color differences. Then we proposed integrated calibration equation for color using regression analysis. Performance of this equation was evaluated using another multi-colored target.

Keyword: Calibration, Multi-colored Target, Reflection Properties, Range Accuracy, Regression Analysis