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The Laser Line Detection for Autonomous Mapping Based on Color Segmentation

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Abstract : Laser projection or laser footprint detection is today widely used in many fields of robotics, measurement, or electronics. The system accuracy strictly depends on precise laser footprint detection on target objects. This article deals with the laser line detection based on the RGB segmentation and the component labeling. As a measurement device was used the developed optical rangefinder. The optical rangefinder is equipped with vertical sweeping of the laser beam and high quality camera. This system was developed mainly for automatic exploration and mapping of unknown spaces. In the first section is presented a new detection algorithm. In the second section are presented measurements results. The measurements were performed in variable light conditions in interiors. The last part of the article present achieved results and their differences between day and night measurements.

Keywords : color segmentation, component labelling, laser line detection, automatic mapping, distance measurement, vector map
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