

## **A comparison of gradient versus color and texture analysis for lane detection and tracking**

Tapia-Espinoza, R., & Torres-Torriti, M. (2009, October). A comparison of gradient versus color and texture analysis for lane detection and tracking. In 2009 6th Latin American Robotics Symposium (LARS 2009) (pp. 1-6). IEEE. <10.1109/LARS.2009.5418326> Accessed 28 May 2022.

### **Abstract**

Accurate lane detection in real-time is a critical task in autonomous vehicle guidance and lane departure warning for driver assistance. Existing vision-based approaches rely mostly on some analysis of the spatial gradient of the image. However, if the road structure is not regular and well delimited, edges may not be easy to extract and other features must be employed. This paper evaluates the use of color and textural features as a way to improve the standard gradient-based lane detection. Textural features are generated using a bank of Gabor filters. A benefit of using color and texture is that the sky regions of the image, as well as side elements, can be detected. The results obtained from testing the approaches on city roads show that color and texture analysis yields a more accurate road segmentation.

### **Keywords**

Roads, Image color analysis, Image texture analysis, Vehicle detection, Remotely operated vehicles, Vehicle driving, Mobile robots, Navigation, Image analysis, Image edge detection.