Automated video analysis for roadway inspections

VOTERS has created a color video acquisition and automated analysis system complementing the other physical measurements. The Prosilica GT1920C is a 2.82 Megapixel color camera with a Gigabit Ethernet interface. It is rugged and designed to operate in extreme environments and fluctuating lighting conditions. The goal of this system is to fully automate the process from capturing the videos to extracting the roadway defects then displaying them as roadway distress layers in VOTERS’ PAVEMON. In addition, the mosaiced raw images provide an excellent visual confirmation of defects identified with other VOTERS pavement inspection sensing systems.

Video processing

Images from the camera are corrected for distortion due to the angle of projection of the camera and analyzed for defects. A multi-class logistic classifier is trained to detect cracks in the image followed by an algorithm that connects detected crack pixels belonging together and calculates the length and average width of the crack. These statistics are used to estimate the condition of the road.

Manholes can also be detected from the images using the statistics of edges detected in an image mask. Even if the manholes are only partially captured by individual images the algorithm will detect them.

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