

## **PROTOTYPING AUTOMATED DISTRESS SURVEY BASED ON 3D LASER IMAGING**

**KELVIN CP WANG**

Professor, University of Arkansas, Fayetteville, Arkansas, USA, [kcw@uark.edu](mailto:kcw@uark.edu)

### *ABSTRACT*

Despite numerous efforts, most information on pavement surface distresses cannot be obtained automatically, at high-speed, and at acceptable precision and bias levels. Based on a functional prototype developed by the research team with line lasers and 3D cameras, the paper discusses a groundbreaking new technology under development to overcome many existing limitations, with the capability of obtaining 3D pavement surface models at true 1mm resolution with full-lane coverage and at highway speed, and conducting real-time analysis on macro-texture, longitudinal and transverse profiles, and the majority of surface distresses. The new technology includes the design and production of complete sensor hardware assemblies and software algorithms to meet the required performance in data acquisition and processing. Combined with differential GPS receivers, an Inertial Measurement Unit (IMU) and other sensors, the new vehicular platform system will ultimately be capable of producing in real-time actual and complete pavement surface models at 1mm resolution in all three directions in a geographically accurate terrain environment.

*KEY WORDS:* Pavement condition survey, automated cracking survey, 3D laser imaging