Southeastern Transportation Center
3-minute Dissertation Presentation

Rail Highway Grade Crossing Roughness Quantitative Measurement Using 3D Technology

Teng Wang
University of Kentucky
Evaluate Hump (safety), Measure subsidence (design and materials performance)

3D Sensor → 3D Surface Cloud → Accelerometer → Acceleration

Vehicle Dynamic Model → Geometry Model → LiDAR Model

Validation

highway (comfort/vehicle damage/maintenance)

Quantitative roughness ratings

Tests with Various Speeds

Simulation Result vs Field Collection Data @ 34.9 mph