

Intelligent Road Infrastructure Systems

Engineering Technology



FUNDER:

Ontario Centres of Excellence

INDUSTRY PARTNER:

iRIS R&D Group Inc.

TIMELINE:

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RESEARCH TEAM:

Mihai Albu
Nikola Cekic
Francis Dorlan

KEY STATS:

Prototypes developed: 1

In January 2018, the City of Toronto was sued 900 times for accidents resulting from road hazards and deficiencies.
- *Toronto Star, 2018*

Context: Rising infrastructure costs and demands result in cities scrambling to keep their roads in a state of good repair (SOGR) in accordance with legislation and Ontario's Minimum Maintenance Standards. Cities currently employ personnel to manually drive, inspect, take pictures and report possible road defects; this is an expensive and complicated solution.

Industry Challenge: iRIS saw an opportunity to develop a computer vision/artificial intelligence algorithm that can detect road deficiencies within an acceptable degree of accuracy. The solution aims to help cities maintain and manage their roads in a cost-effective and proactive manner.

Solution: The research project helped build the solution to iRIS' identified need. A cloud web service was created that automatically slices video captured on roads into multiple images for further analysis. Web interface was created to allow visual inspection, data selection and report generation.

Impact of the project: When deployed to multiple city fleets, the solution has the capability to collect and analyze city-wide data into strategic, understandable and actionable GIS centric data points. iRIS successfully landed a municipal contract to evaluate the productivity of the system. Upon successful prototype testing, iRIS' product offering will support Ontario's plan for real-time tracking of road hazards and collecting maintenance evidence.

Mohawk's role: The prototype developed by Mohawk was designed as a first step towards a fully automated system for detecting road deficiencies. Mohawk College's expertise in data analysis, artificial intelligence, and web development produced a working prototype which includes data compression, cloud hosting, video analysis, image recognition and reporting results in standard and map-format layouts.