Introduction

Lonrix Limited is a proudly New Zealand owned company, operated by a team of agile and dynamic civil engineers, software engineers and data analysts. The team is passionate about building products that make a positive and lasting impact on the day-to-day asset management operations of engineers across the globe.

Our flagship software, JunoViewer, forms an integral part of the asset management processes for roading and rail in New Zealand and Indonesia, with a large footprint in Australia, South Africa, Mozambique and India. Our framework enables users to identify areas that pose a risk to the safety of road users, while providing guidance on how available resources can be allocated to address these risks.

Our expertise in developing road condition prediction models, benefit / cost analysis, fuzzy logic and statistical / visual analytical tools combined with mapping and offline mobile applications makes a real difference in the way data is used for decision making.

Objectives

We are always exploring ways in which we can enhance our products, and one of the areas we have identified that would make a difference to data collection, processing and decision making in future is the field of Artificial Intelligence.

While our aim is not to move into the field of data collection, we deem it important that we understand the requirements AI, especially with visual data (photos and videos), will place on our systems and databases, and that we are ready to accommodate this to provide solutions to our users. In this we need the assistance of highly regarded expertise from research institutions.

Our goal is to develop models that use AI / Machine learning that would be able to identify road condition data and off-pavement assets from videos or images. This would have to be possible even when videos or images are sourced from areas that are shaded – like country roads through woods.

Collaboration Goals

Our intention, foremost, is to provide tools to the industry that would ultimately result in improved asset management, in turn enhancing the safety aspects of roads, which would save lives.

To this end, we will provide the required resources in terms of hardware and data, and work with the institute and its representative/s to research existing models, and calibrate this for the New Zealand environment. Our own research has shown that, while there are datasets available, these are not very accurate nor is it calibrated for use in the New Zealand context.

Going forward, using existing laser data that, combined with human "labelling" can lead to more iterative research between Lonrix and the research institution. This would culminate in a usable model that would enable authorities with limited resources to use video and images to identify road distresses, and use the available resource to address exactly that, with global application.