

REAAA[®]

Driving Progress

ROAD ENGINEERING ASSOCIATION OF ASIA & AUSTRALASIA (NZ)

A road into the future...

Using AI to identify Low Volume Road defects

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Focal Points

- Background LVR – The Problem
- JunoIntelligence (JI) – The Solution
- JI – How it Works
- JI – Benefits | JV Bringing it Together
- JI – Demonstration



**LOW
VOLUME
ROADS
WORKSHOP
2022**



Background – The Problem

Low Volume Roads – Assessment and Maintenance Plans

How do you capture information about the performance of your road?

- Safely (small roads, large trucks)
- Reliability (robust data integrity)
- Cost effectively (LVRs = smaller budgets)

Visual Inspections



Background – The Problem

Visual Inspections → Maintenance Planning

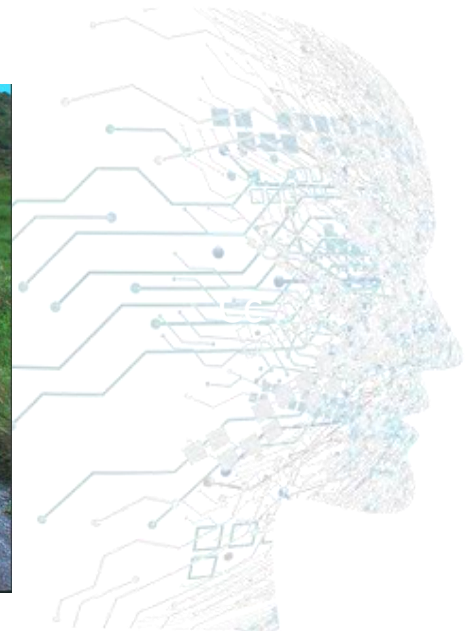
Current Process

We want to: **Identify** → **Measure** → **Assess Distress**

Requirements

Domain knowledge → Expert Staff → Man hours → Budget

- Time + Cost Restraints
- Dangerous (Narrow Roads, Gravel)
- Manually taxing → Isolated Data
- Subjective Assessments



JunoIntelligence: The Solution

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- Cost Effective Data Collection
- Safe (Capture Quality GPS Videos for JI)
- Reliable (Continuous Learning & Interactive)
- Centrally Managed & Integrate with Systems
- Custom Dashboards, Reports, Visualisation, Processes & Algorithms



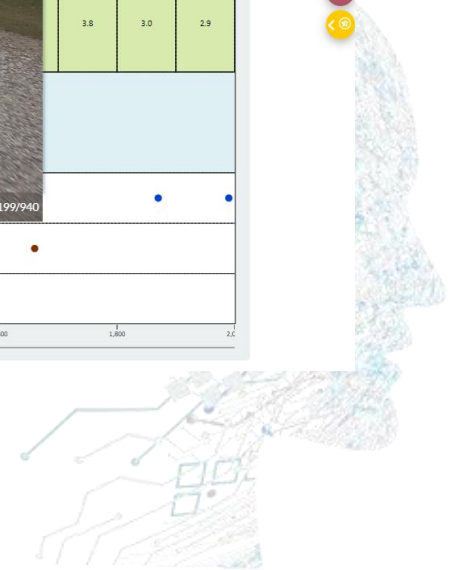
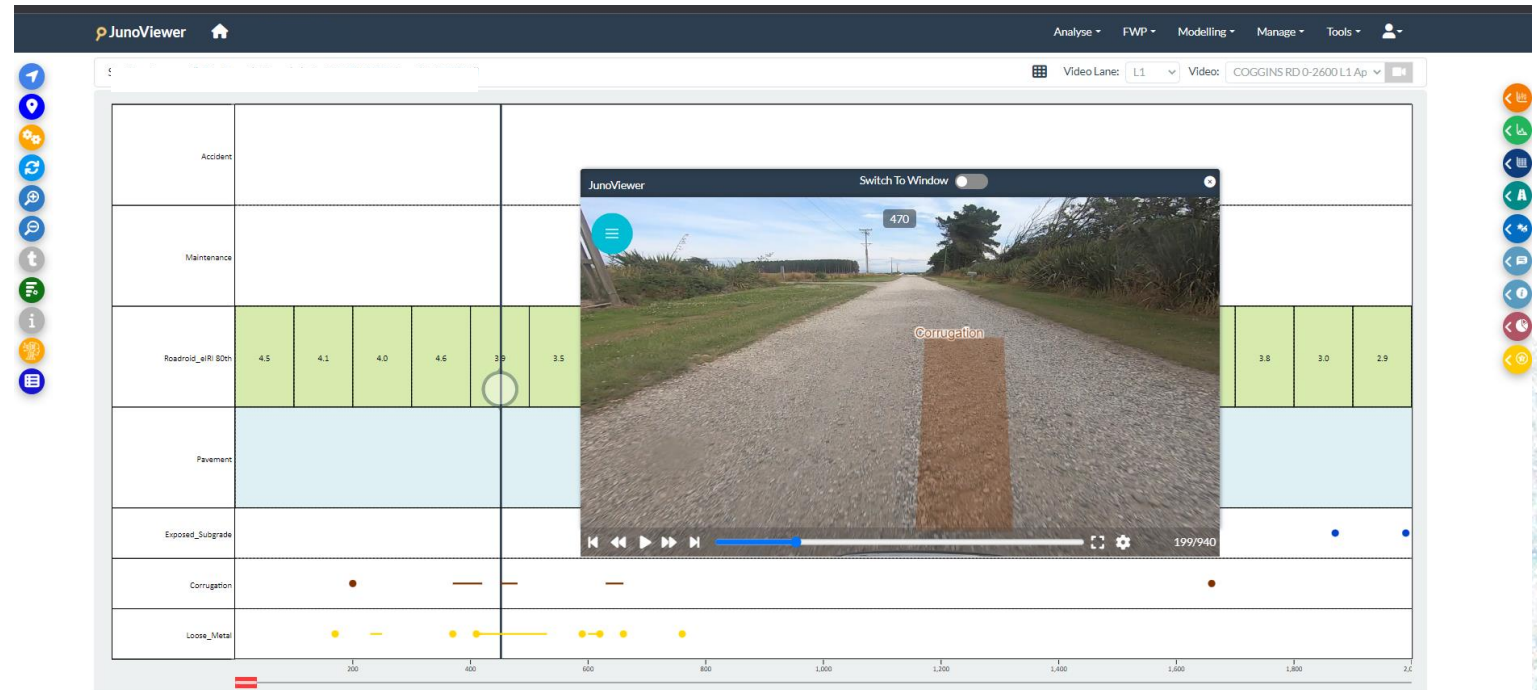
Video Source



JunoIntelligence: The Solution

Distress Detection Examples

- JI Sealed Roads
 - Failed/Patching
 - Cracking
 - Flushing
 - Potholes
 - Sealed Cracks
- JI Unsealed Roads (stage 1)
 - Corrugation
 - Loose Metal
 - Potholes
 - Exposed Subgrade



JunoIntelligence – LVR Benefits

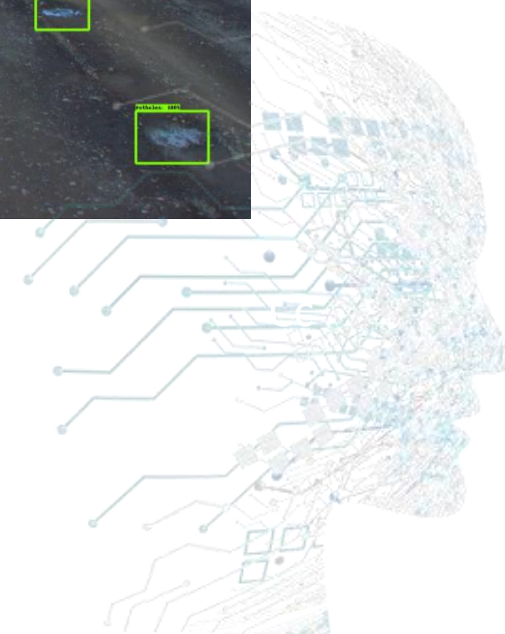
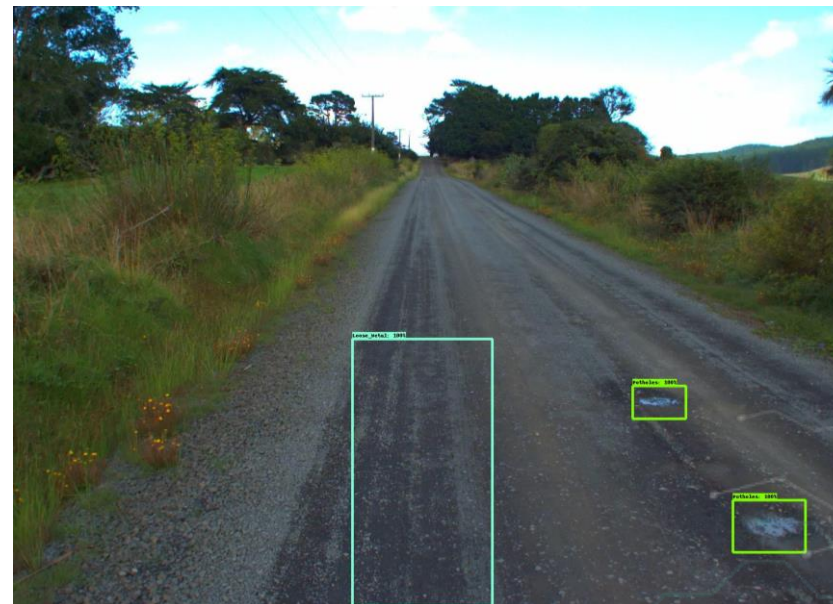
- ✓ Safe | Staff site exposure
- ✓ Cost Effective | Targeted site visits
- ✓ Network Performance Monitoring
- ✓ Deterioration Forecasting

Network Post-Processing:

- ❑ Estimate quantity of network repairs
- ❑ Indicative distress quantity
- ❑ Health rating (Distress severity/Heat Maps)

JunoIntelligence Possibilities for LVRs

- Crossfall/Shape (3D imaging)
- High Shoulders
- Drainage Assessment (Water pooling detection)
- Gravel Maintenance (Gravel loss)



JunoViewer – Bringing it Together

Virtual Field Inspection Tool (V FIT)

Virtual Inspection of your network from the home/office

- ✓ Time Saving
- ✓ Centralised Data
- ✓ Various JI Data Visualisation Views
 - ✓ Interactive JI Interface (Create, delete, update JI output)
 - ✓ JI Strips
 - ✓ Image Filters
- ✓ Decision Making on Works Plans
- ✓ Data Pull-outs (Closely analyse your roads performance)
- ✓ Distress Measurement Tool (Measure average area of distress)



Ji Solution - Example

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The screenshot shows the JunoViewer web application interface. The browser address bar displays the URL: `secure.junoviewerweb.com/pages/mainviews/customviews/VirtualFieldInspectionTool_V3.aspx#!`. The application header includes the JunoViewer logo, a home icon, and the text "Roads Consulting". A navigation menu contains "Analysis", "FWP", "Modelling", "Manage", and "Tools". A "Choose Location" dialog box is open, containing the following fields:

- Network: Invercargill City Council - Ur
- Section: S
- Sub Section: STAUNTON RD
- Lanes: All
- Section Id: 5186
- From Km: 3.5 To Km: 3.819
- Date Range: < 5 Years

Buttons for "Close" and "Ok" are at the bottom of the dialog. A sidebar on the left contains a list of icons and a text box with instructions: "Please follow the below steps: 1. Click on choose location at the top left to... 2. Click on the Settings at the top right set to... 3. Click refresh to load the strip map". The footer of the application shows "© JunoViewer Web 2022. Powered by MONICOM" and "End User Licence Agreement".



• Thank you!

