

Automatic Pavement Distress Detection, PCI Evaluation & Interactive Map Visualization

Jefferson City, MO

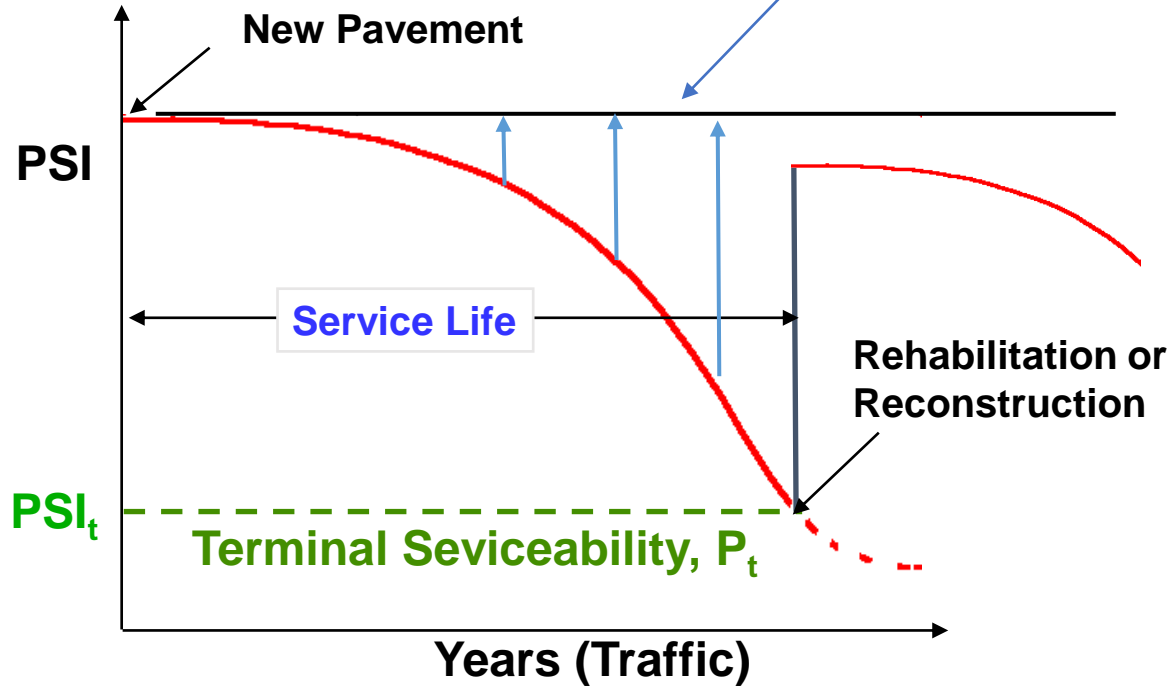


TIGER EYE
ENGINEERING

Why 'Manage' Pavements?

Fixing road becomes exponentially more expensive with deferred maintenance

Overall Condition 'Rating' or 'Score'



Why Automated Evaluation?

- Walking inspections are expensive, subjective and pose safety risks
- ARAN evaluations are expensive and not fully automated (subjective)
- A right-sized, reliable solution was needed for cities

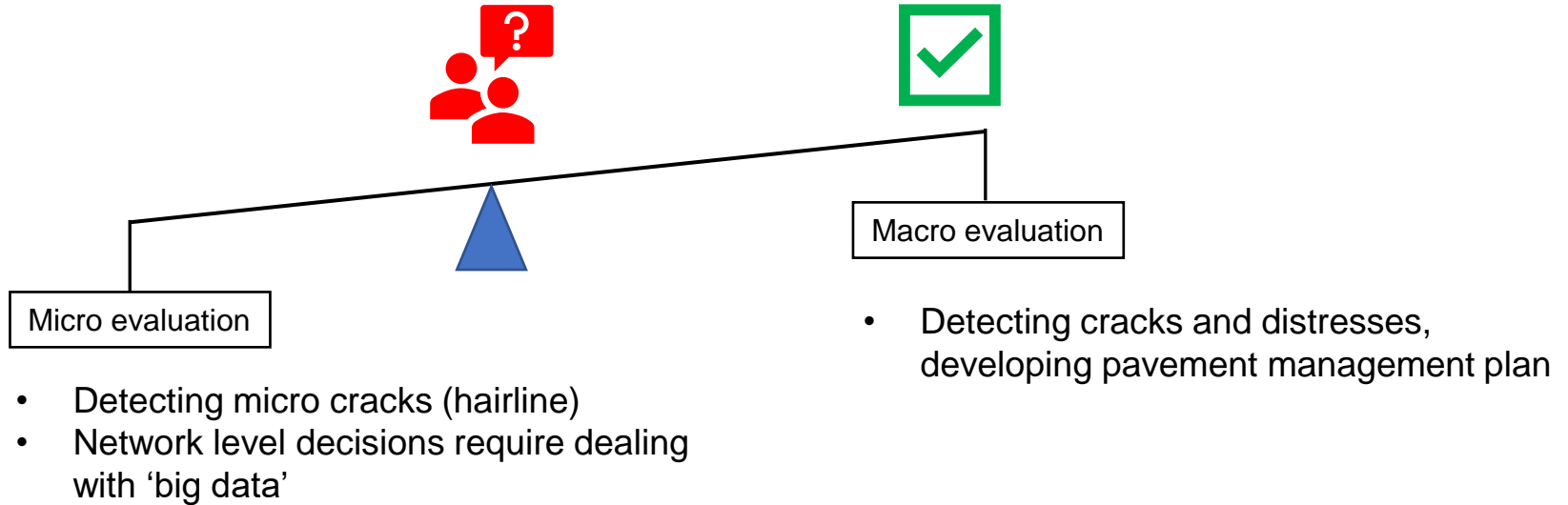
- Budget constraint
- Hair line cracks?



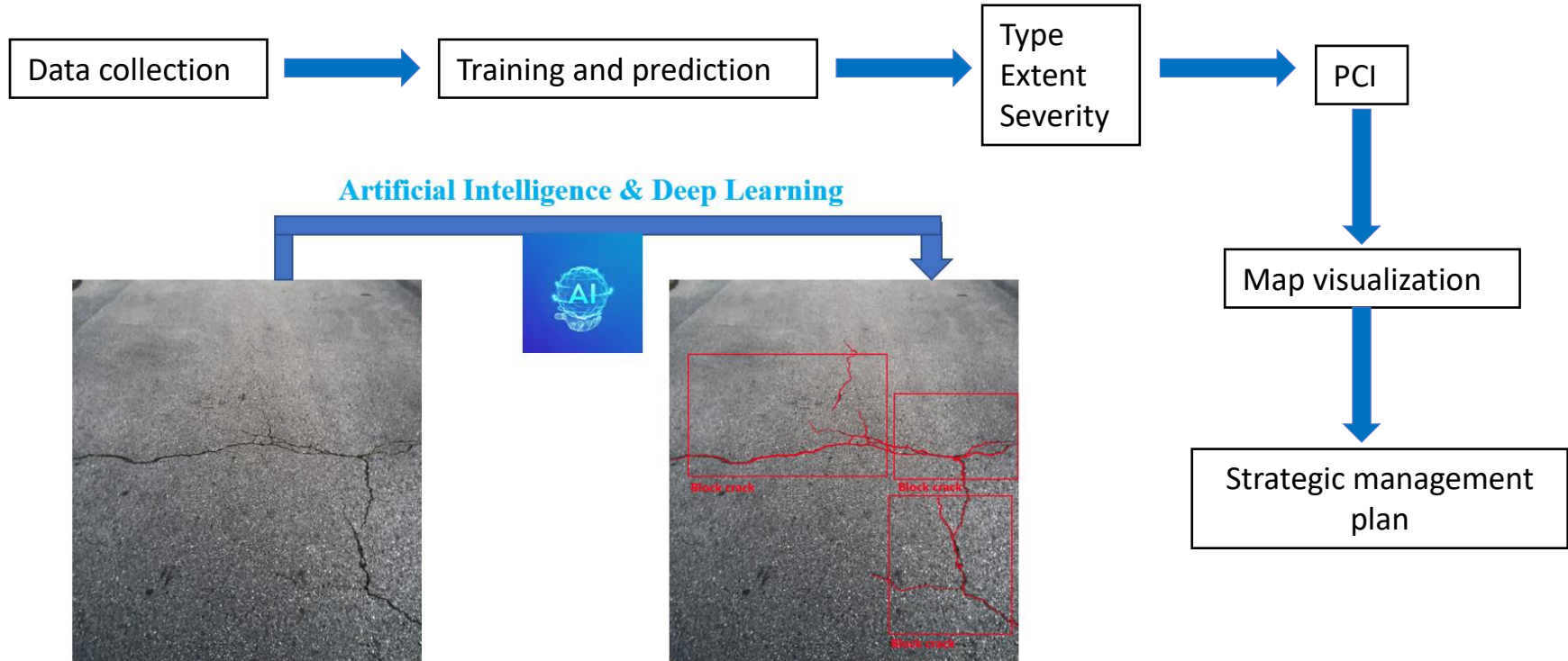
- Subjective
- Inconsistent
- Representative sample (10%)
- Expensive
- Time consuming



Micro or Macro evaluation? Which is needed?

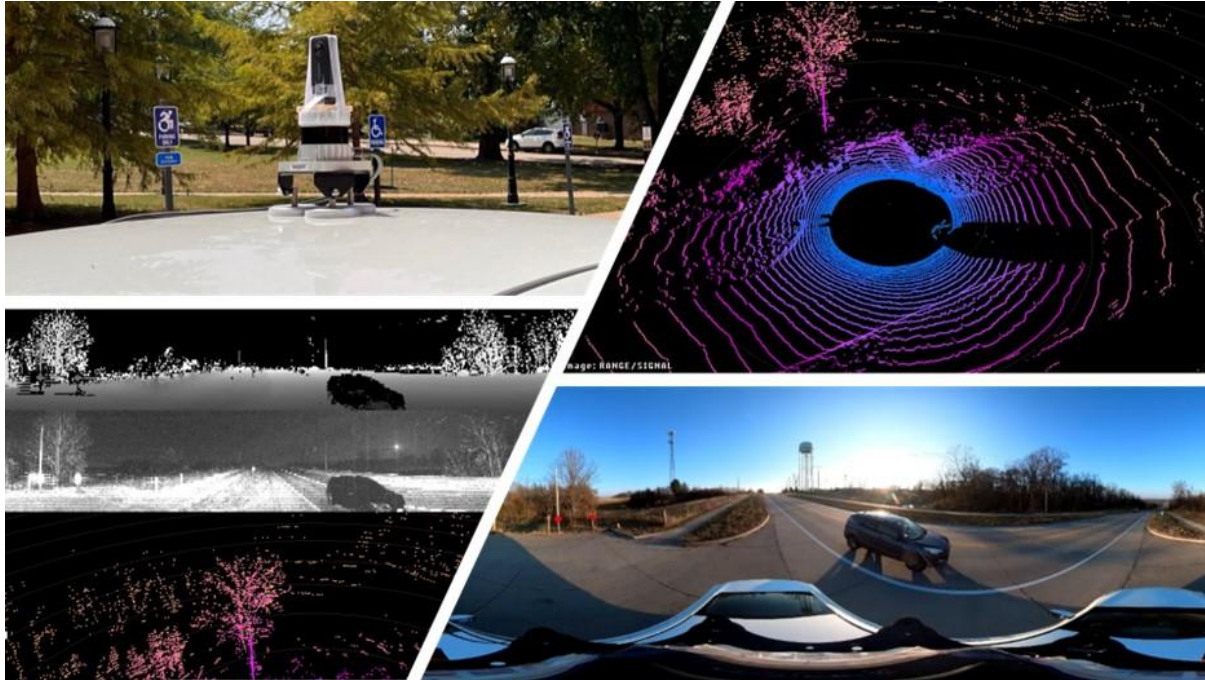


Pavement Monitoring with AI/Machine Learning



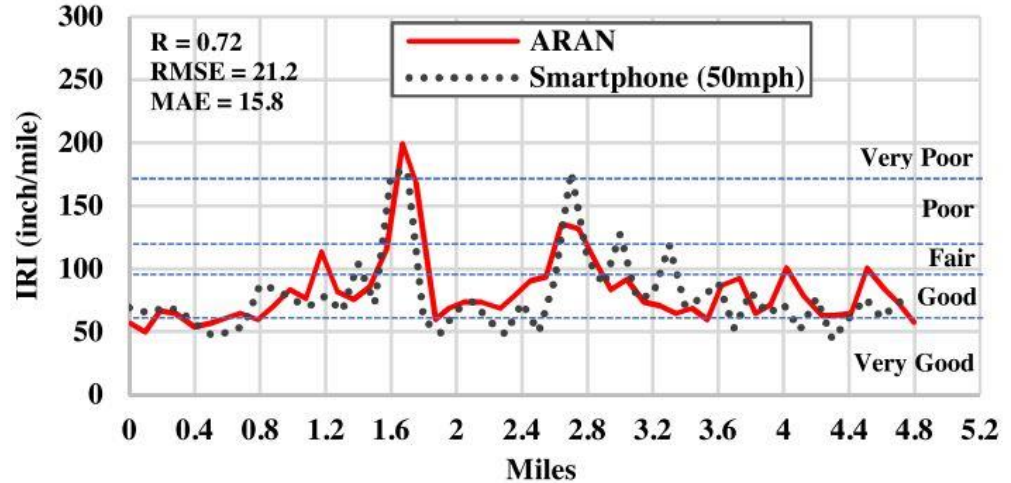
Data collection (250 miles)

Using series of high-resolution cameras and Lidar to capture videos in top-down view



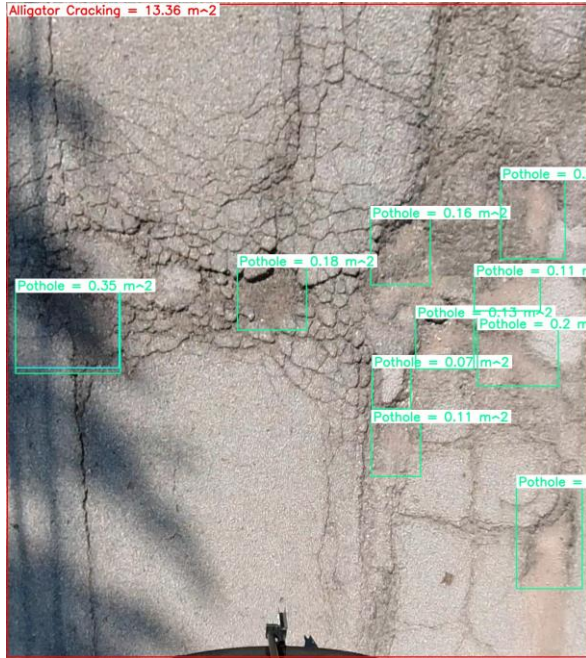
Data collection

Use mounted smartphone to capture roughness (International Roughness Index – IRI)



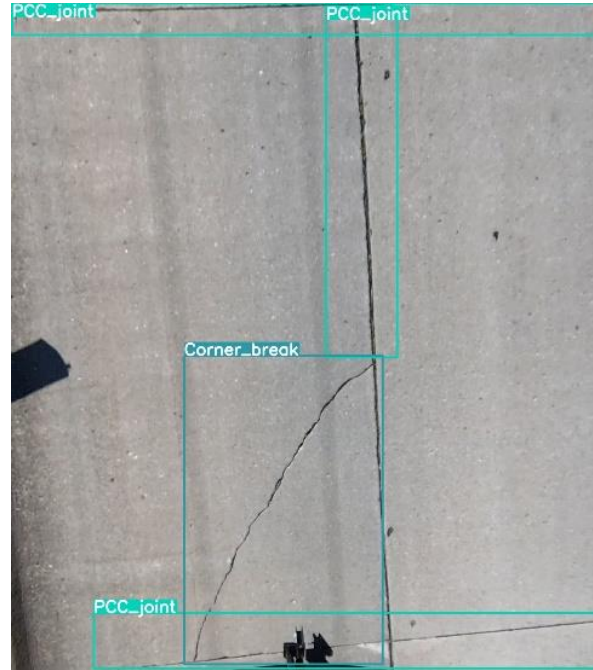
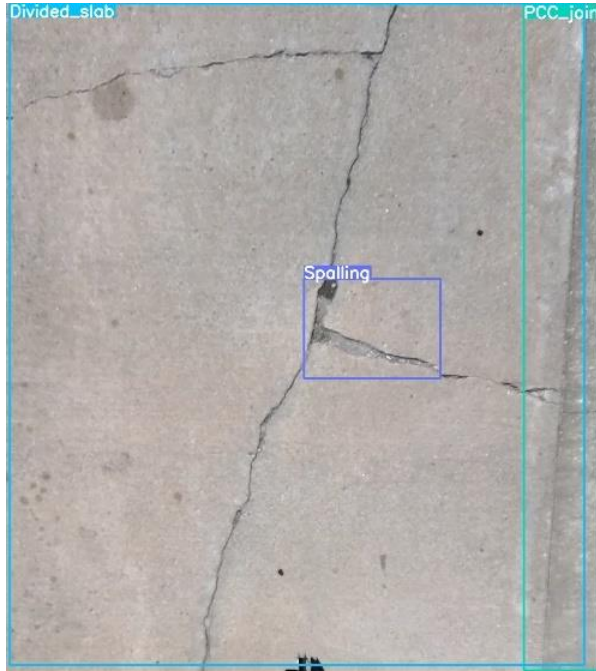
Prediction Results (Flexible Pavement)

Representative images and automated distress detection results



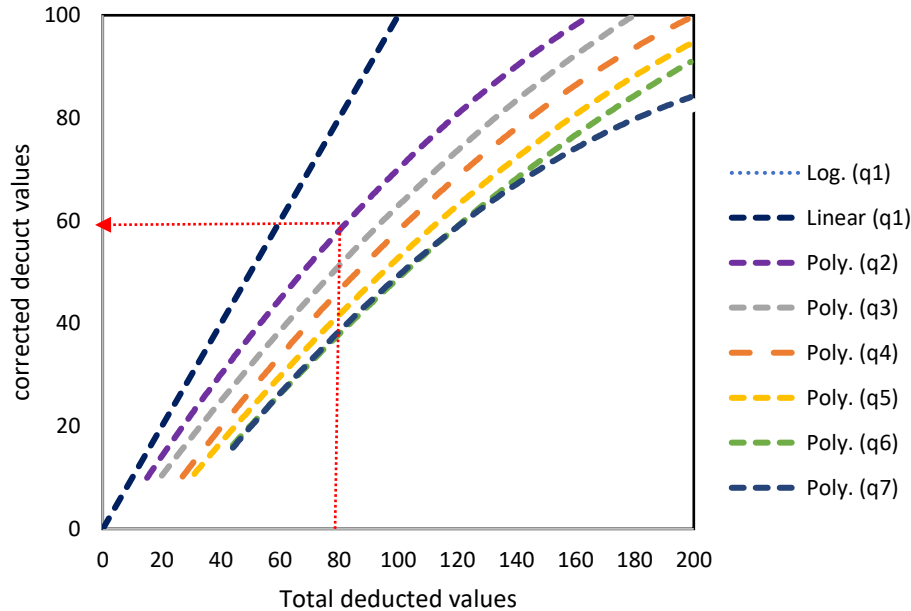
Prediction Results (Rigid Pavement)

Representative images and automated distress detection results



Pavement Condition Index (PCI) Rating

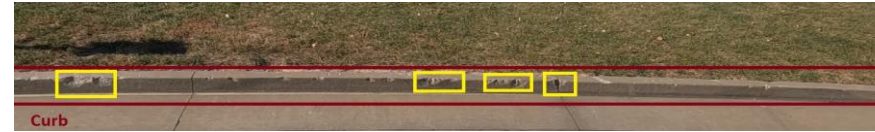
- A full (100% coverage) PCI survey and video capture survey.
- PCI ratings will be computed following ASTM D6433-20.



PCI	Condition
100	Good
85	Satisfactory
70	Fair
55	Poor
40	Very Poor
25	Serious
10	Failed
0	

Asset Inventory and Evaluation

- Curb and gutter evaluation
- Fire hydrant locations
- Garbage can/bin locations (& tags)
- Guardrails, sidewalk inspection
- Sign condition inventory and evaluation
- Pavement marking detection & evaluation
- Utilities



Visualization Dashboard

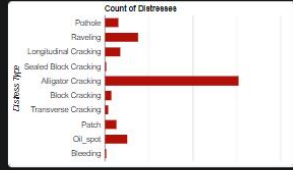
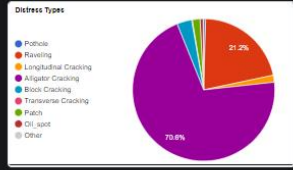


Visualization Dashboard

EXPLORER



EXTENT
9.5m



Select Base Map Style

Satellite View

Select Distress Types

Alligator

Block

Transverse

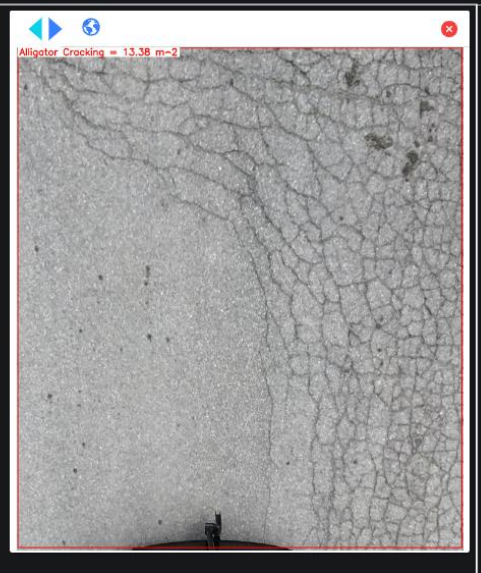
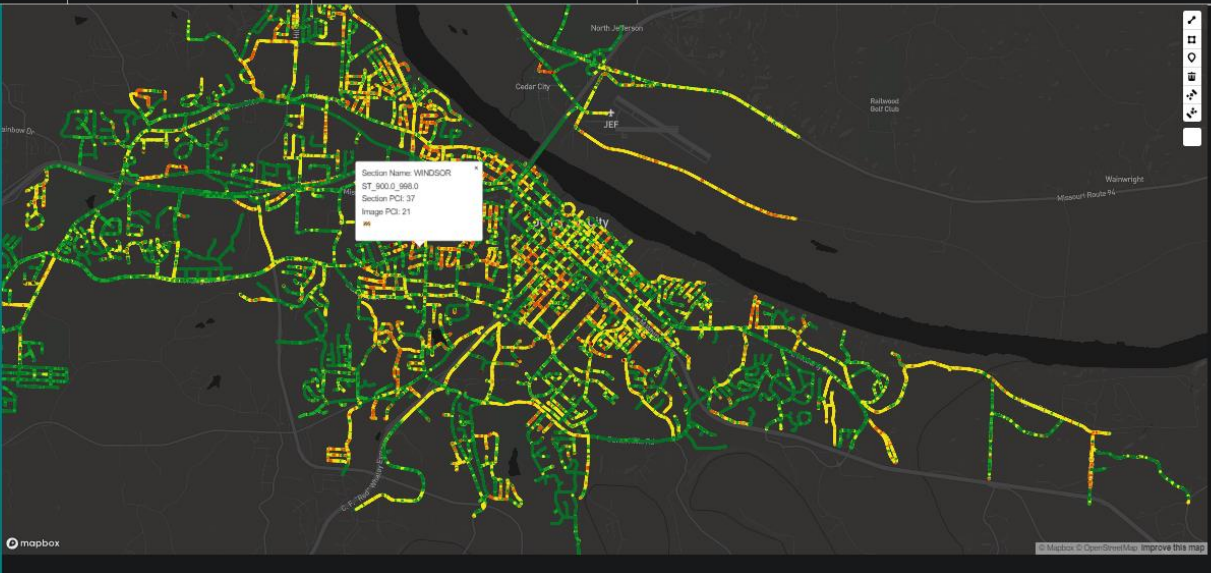
Longitudinal

Potholes

RESET FILTERS

Filter by PCI

mapbox



Curb & Gutter Evaluation



360 street-view: adjacent assets

[360 view](#) (clickable link)

The image shows a 360-degree street view from a vehicle's perspective. The scene includes a paved road with yellow directional arrows, two blue trash bins, a utility pole, and residential houses in the background. The interface features a top navigation bar with the 'Mapillary' logo and a search icon. A right-hand sidebar displays the user profile 'TEE Organization' and a list of 'IMAGERY LAYERS' with an 'Upload' button. Below the sidebar, there are three thumbnails of 360-degree images, each with a timestamp of 'May 29, 1989 1:01 AM' and a view count (1, 452, and 500 respectively). A bottom navigation bar contains icons for 3D view, sharing, history, zoom in (+), zoom out (-), and a compass. A map inset in the bottom-left corner shows the current location on a street labeled 'Southridge Dr'.