

Understand corrosion.

Focus the next investigation.

Machine learning for underground rock-bolt degradation, explained through an evidence-led AI workflow. Built to help engineers investigate concerns and plan more informed inspection and maintenance.



SYNTHETIC 3D SCENE

ONE CASE. TWO DIFFERENT SIGNALS.

SYN-03 / 437 DAYS

CTGAN_0001

Synthetic input / stored model results

83.83%

Static reserve / screen 66%

58.70%

Ductility / screen 70%

The static screen is not triggered; the provisional ductility screen prompts review. This example shows why one reassuring number should not hide a different material response. The flags are screening indicators, not failure probabilities or site acceptance decisions.

PREDICT. EXPLAIN. TRACE.

LAVA connects environmental and support characteristics with separate estimates of section, strength and elongation change. Copilot explains the results, identifies missing evidence and links to original records and approved documents.

The research combines XGBoost and Gaussian-process regression within a site-specific screening method. Engineering judgement and applicable site criteria remain part of every real assessment.

MAKE THE REGIONAL PICTURE USEFUL.

Heat maps and regional views give teams a shared starting point: locate a concern, compare screening results and open the supporting evidence. Stored trajectories keep the time dimension visible.

The preview heat layer interpolates eight synthetic endpoint severities. A production risk map would also require verified locations, inspection histories, consequence criteria and engineering review.

START WITH A FOCUSED PILOT.

01

Frame the task

Choose a real review question and the people who need the answer.

02

Check the evidence

Assess available support, water, geology and inspection records.

03

Agree what success means

Test traceability, review effort and useful decision support.

Public preview: synthetic examples and prepared answers. Operational savings and risk reduction remain pilot objectives.

EXPLORE THE WEBSITE + DASHBOARD**lava-engineering.pages.dev**

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