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Data Exposed

Case Study

Water Utility – Acoustic Leak Detection System using Advanced Analytics

Using Advanced Analytics to detect faults in pipes to enable a shift from reactive to proactive main break repairs.



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Problem.

This water utility provides water and wastewater services to the states 1.75 million residents. This involves the maintenance of a vast range of vital assets. Like many organisations managing assets, this utility has begun focusing itself more towards preventative maintenance rather than responsive maintenance: predicting where maintenance is needed and addressing that need before it turns into a financial and reputational liability.

The size of the utilities pipe network is 27,000 km for water and 8,700 km for wastewater. One particularly common failure mode is when water pipes crack. Unfortunately, cracks can be hard to detect and may grow worse over time before being detected. This utility initiated a program to attach hydrophones to its water network which listen to the sounds of pipes and transmit recordings back.

Solved.

Exposé were engaged to build a production data analysis platform, with both organisations collaborating to adapt algorithms for detecting breakages and communicating these to operational staff to assess and repair.

Exposé and the client collaborated on a targeted proof of concept, putting the new architectural extension on the client's existing Data Analytics Platform through its paces. This was a huge success and was put into production, proving amongst others that:

- Databricks could truly act as a big data collaboration platform for the various data engineers, domain scientists and data analysts to participate in delivering a plethora of use cases from the data from their smart networks.
- It could scale to meet a variety of workloads.
- It would be able to support both Python and R workloads.
- It would extend the purpose of the smart workloads from monitoring, alerting and analysis, towards also becoming an AI based expert system.

Business Benefits.

This water utility provides an essential utility to customers. Any outage caused by pipe breakage has an incalculable impact to the client's service delivery, reputation and the public's trust. With this platform, the client has been able to respond to and fix cracks in pipes that would have been otherwise undetected, lowering reputational and operational risk. For example, in the same week as the platform was deployed, a broken pipe was identified in an inner city suburb that was not otherwise detectable. This meant that the client's operational staff were able to fix this pipe before a burst occurred, thus saving money, reputation and brand but also eliminating the risk of parts of the suburb not having water for a period of time.

Quantifiable benefits in the early stages see a 24% repair cost reduction and a 35% supply interruption time reduction.

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Do you have any additional questions, or
want to know more?

We would love to hear from you.

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