

AI Processing of Building Roof Defect Identification

Moreton Bay Regional Council

About the Customer

Moreton Bay Regional Council (MBRC) is the local government spanning 12 divisions across the Moreton Bay Region, which is a diverse area, spanning more than 2,045 square kilometres between Brisbane City and the Sunshine Coast in Queensland, Australia. Moreton Bay is one of Australia's fastest growing urban regions with its population forecast to grow by over 40 percent to more than 690,000 by 2041.

Customer Challenge

Moreton Bay Regional Council needed a reliable, rigorous and innovative solution to identify defects on building roofs across their asset portfolio, including all Council properties.

Identifying and monitoring roof damage is important for ongoing asset maintenance scheduling, and reducing costs of ongoing maintenance, as defects that are identified and rectified early will not continue to increase in severity, which in turn would increase maintenance costs dramatically.

Without the AI/ML Computer Vision solution, MBRC staff would need to manually inspect each roof for damages, which is time consuming & a potential safety hazard.

Blackbook.ai's Solution

Blackbook.ai was engaged by MBRC to design, develop and deliver an AI/ML Computer Vision solution that applies object recognition technology to images or video footage from Moreton Bay Regional Council's drone fleet. The solution identifies defects on exterior roof assets of MBRC's buildings and make this data available via API to load into MBRC's corporate enterprise asset management system(TOMAS).

Data ingestion for this project was achieved with Amazon Cognito for user sign up/sign in, alongside Amazon S3 Standard Storage, Amazon CloudWatch and AWS Lambda. The Video Queue was monitored and maintained with a combination of Amazon Simple Queue Service (SQS), Amazon S3 Event Notification and AWS Lambda. Training Data was annotated using Amazon SageMaker Ground Truth as well as Amazon Simple Notification Service (SNS).

The Machine Learning Processing phase was enabled by AWS Step Functions, Amazon Elastic File System Storage, Amazon Sagemaker, Amazon DynamoDB, Amazon S3 and AWS Lambda. The ML Model was retrained using Amazon Sagemaker in tandem with AWS Step Functions and AWS Lambda.



Achieve Strategic
Objectives with
AI & ML

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Results & Benefits

Blackbook.ai's machine learning analysis solution of the ingested drone footage captured by Moreton Bay Regional Council allows MBRC to identify defects and their severity as per Council guidelines.

The outcomes from this project assist Moreton Bay Regional Council to determine future requirements for maintenance, renewal/replacement activities, and assist with long term financial planning requirements.

As the solution continues to develop and benefit from retraining, the defect identification model will continue to improve, which will increase the financial and safety benefits for Moreton Bay Regional Council.



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About Blackbook.ai:

Blackbook.ai is an AWS Advanced Consulting Partner designing intelligent solutions that unlock the value of our clients' organisations. Blackbook.ai was founded in 2017 to provide local opportunities for local talent and offer an alternative for Australian companies to work with local, hardworking and capable consultants.

With over 150 team members in Brisbane, Sydney and Melbourne, we work with cutting-edge technology to solve business issues for some of the biggest companies in Australia. Our experienced team understands your challenges and is committed to develop the best suitable solutions and deliver premium quality work.

Our tailored AI, Automation and Analytics solutions leverage your company's data and drive productivity.

#AppliedAI Components



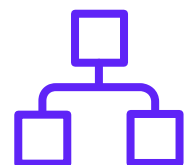
Computer Vision



Prediction



Anomaly Detection



Customer Model