

Generative AI-Driven Image Analysis Enhances Industrial Quality and Safety Operations

The Client

A well-established joint venture in industrial electrical and power infrastructure, operating for over three decades, manufactures power cable accessories, transformers, safety equipment, and railway systems across multiple facilities nationwide, serving diverse industries.

Business Challenges

The organisation operates large-scale manufacturing and field operations across multiple sites, requiring rigorous quality inspections, personnel verification, and accurate labelling traceability.

- Manual visual inspections for surface defects were inconsistent and prone to error
- Personnel verification at remote sites remained vulnerable to proxy entries and unauthorised access
- Site condition assessments were performed manually, delaying hazard identification and compliance checks across sites
- Sticker and label data was recorded manually, causing transcription errors and slow data entry

The Solution

MTSL designed and deployed a comprehensive AI-Driven Image Analysis platform comprising four modules: Selfie Verification, Product Damage Detection, Site Condition Detection, and Sticker Text Extraction.

- A serverless architecture on AWS powers all four modules through a shared API
- Amazon Rekognition and Amazon Textract enable image recognition and text extraction
- Amazon Bedrock structures raw OCR output into standardised, enterprise-ready data records
- All modules integrate seamlessly with existing mobile and web applications used on site

Impact Delivered

All four modules achieved confidence scores of 75 percent or higher during the proof-of-concept phase, meeting defined success criteria across evaluation areas.

- Product Damage Detection reached 88 to 94 percent confidence on defects
- Site Condition Detection achieved 87 to 93 percent classification confidence
- Sticker text structuring reached 95 percent accuracy across 12 label formats
- Label processing time fell from four minutes to under three seconds
- End-to-end response times remained under 3 seconds across all modules

Technology Stack

- Amazon SageMaker
- Amazon Bedrock
- Amazon Rekognition
- Amazon Textract
- AWS Lambda
- Amazon API Gateway
- Amazon S3

Services Delivered

- Generative AI Solution Design
- Computer Vision & Image Analysis Development
- OCR & Document Intelligence Implementation
- Cloud Architecture on AWS
- Application Testing & Deployment

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