

AI Based Quality Inspection and Anomaly Detection

Tech Mahindra's deep learning computer vision (CV) based quality control (QC) solution is built to monitor anomalies and defects in the manufacturing print process for the tampon blades.

Current manufacturing processes use manual and classical CV models to perform QC, but this method is prone to producing repeated incorrect classifications, resulting in loss of inventory and process inefficiencies.

OUR SOLUTION

Our deep learning-based CV based QC solution incorporates classification and object-detection to detect errors in printing process and provides analysis through ELK stack to monitor detects over time.

Features of the Solution

- **Component splitting:** Split various components of the blade images retaining quality of images
- **Fine grained classification:** CV models to identify very minute defects in the images
- **Object detection:** CV based models to identify and localize defects
- **Output based on consensus:** Models output is monitored based on consensus between models. Results displayed on the dashboard of an ELK stack

Solution Technology

- Pytorch/Keras based AI models
- Object detection and fine-grained classification algorithms
- Model prediction, data, and API monitoring through custom, Prometheus, and ELK stack

KEY CHALLENGES

Prime challenges that such industries face are as follows:

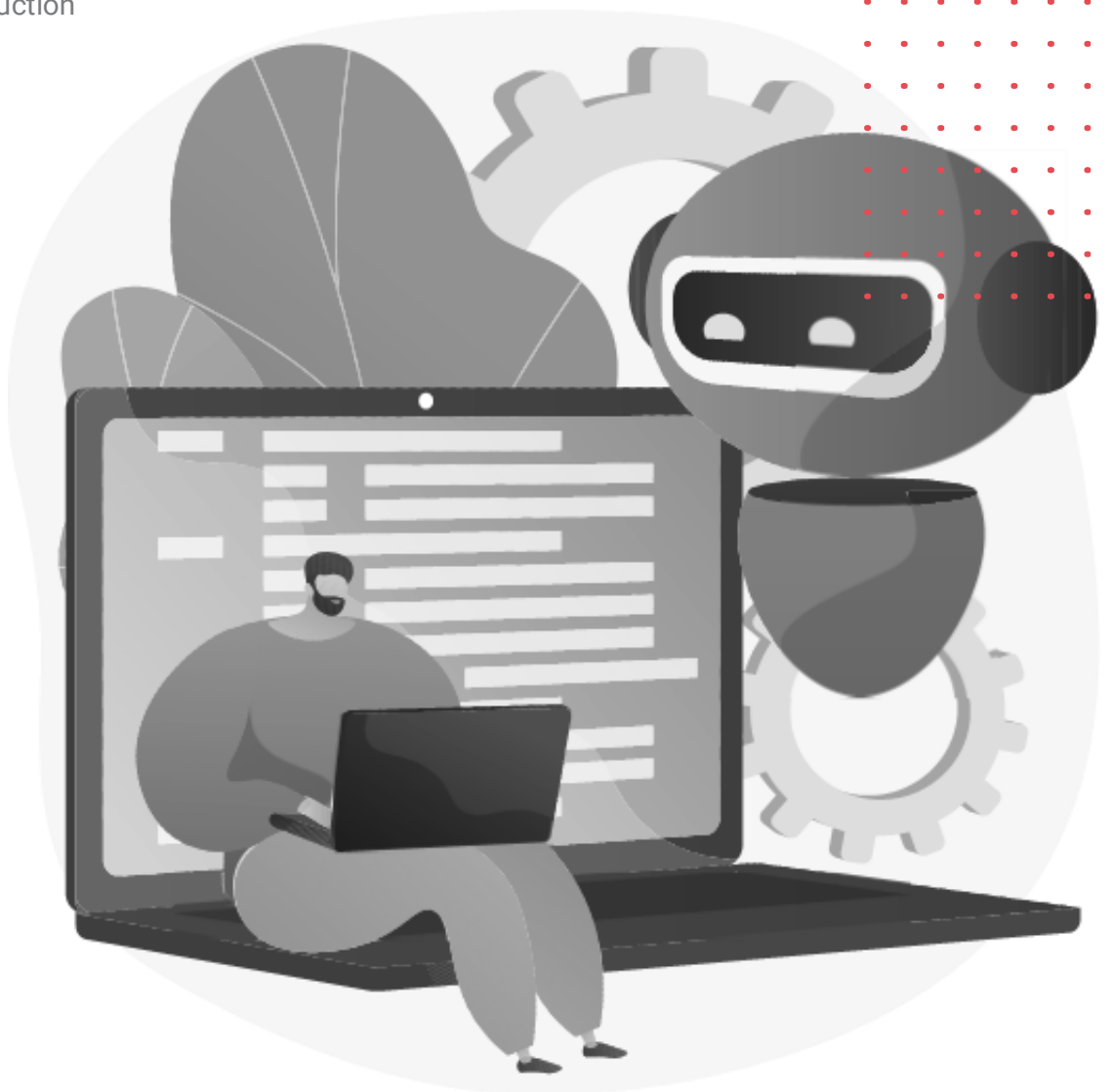
- Manual and time-consuming process to identify defects in the printing process
- Digitalization of end-to-end QC process with automation and improved accuracy
- Enhancing functionality of pre-existing QC process to provide better results
- Identifying minute defects in multiple components

BENEFITS

- 99.23% accuracy for defect identification in the print process
- Reduced effort and time to monitor defects
- Reduced false positive/negative cases
- AI solution with an ELK dashboard for monitoring the defects and anomalies

TECHM NXT.NOW ADVANTAGE

- Diversified global player with 20+ years of data, analytics, and AI practice
- 11,000+ data, analytics, and AI associates with domain led consulting focus
- Global footprints across 55+ countries
- Partner-enabled ecosystem with COEs across all these technologies
- Comprehensive frameworks, processes and tools to move PoCs to production



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