Cognizant, AWS IoT solutions Enhance Manufacturing Quality through Advanced Computer Vision, pave the way for Generative AI

- *APEx solution combines data across multiple industrial systems to drive excellence in manufacturing operations, operates locally at the edge with AWS IoT services.*
- *Gen AI solutions overlay this digital foundation to drive high value use cases in manufacturing.*

Cognizant is deploying cutting-edge computer vision (CV) technology to advance quality management in manufacturing environments. Cognizant's Asset Performance Excellence (APEx) offering is an integrated IT-OT Smart Manufacturing application suite built on Amazon Web Services (AWS) to identify quality issues in the production process in real-time using image analysis.

APEx is designed to expedite the development of a tailored sensing and analytics infrastructure, and operates in conjunction with AWS services like AWS IoT Core, AWS IoT SiteWise & Sitewise Edge, AWS IoT Greengrass, Amazon SageMaker, SageMaker Groundtruth, Neo, Lambda and other services. It provides a comprehensive quality monitoring experience for plant managers, operating entirely on-premises, at the edge, eliminating the need to send large amounts of data or sensitive information to the cloud.

The roadmap for this solution includes enhancements through generative AI tools from AWS such as Amazon SageMaker and Amazon Bedrock, delivering advanced digital twin capabilities that help customers arrive at insights in a more collaborative way and drive greater value by benchmarking quality parameters across larger plant networks.

"Managing factory production quality is a complex challenge, requiring engagement from multiple participants across the production process," said Sharath Prasad, Cognizant's Smart Manufacturing global offering lead. "Our APEx solution enables rapid, meaningful improvements in several areas, including productivity, resource management and maintenance, to accelerate time to value for end users. The infusion of generative AI into this platform towards the end of 2023 is expected to help accelerate adoption at scale."

Cognizant APEx leverages cameras mounted on production lines to capture product images, which are then analyzed using computer vision to detect defects in produced parts. In addition to displaying key metrics like yield, scrap rate, cycle time, and overall equipment effectiveness, the system uses machine learning models to identify and describe quality issues.

"AWS and the AWS Partner Network are committed to advancing IoT capabilities to help manufacturers rapidly extract insights from their equipment and apply this rich data to transform their business operations," said Douglas Bellin, worldwide head of Smart Manufacturing at AWS. "Cognizant's APEx solution supports our efforts by integrating data collection, processing, analytics, and monitoring capabilities, enabling near real-time defect detection in manufacturing processes and better manufacturing outcomes.

The APEx solution has already delivered significant business benefits for clients, including:

- **Productivity**: Improving throughput, efficiency, removing operational bottlenecks. leading to overall improvement in overall equipment effectiveness.
- **Asset performance**: Improving overall availability of the assets and decreasing downtime.
- **Quality**: Automating quality inspection towards improving accuracy and reducing cost of poor quality.
- **Sustainability**: Positively impacting the environment by reducing emissions, water footprint and waste.

APEx fully adheres to AWS's IoT best practices for a quality management use case, capturing these in an Architecture Guidance which significantly reduces the time required to set up an in-plant CV quality detection system. This guidance includes interfaces for one-touch gateway onboarding, mitigating the need for specialized personnel to manage the gateways and CV models. This solution is available on the AWS Marketplace.

Learn more about Cognizant's IoT solutions here.

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