Tiger Analytics

Tiger Analytics helped a Fortune 100 F&B manufacturer use Deep Learning to maximize chip quality and reduce manual efforts by 75%

Tiger Analytics implemented a Deep Learning-based Computer Vision model to assess if potatoes were optimally peeled, increasing the quality of chips. The solution automated the process to adjust various plant parameters in real-time, making it more efficient. It also established a continuous quality monitoring mechanism to sustain manufacturing quality.

The Background

Our client is one of the largest F&B manufacturers globally, with several units manufacturing potato chips. They needed to improve their chip manufacturing units' output and efficiency and manually adjust plant parameters to maintain quality and consistency. They also wanted to automate the process of analyzing the optimum peeling levels through computer vision and adjusting the plant parameters through real-time IoT integrations.

Key Challenges

\ **Inconsistent potato peeling:** The under-peeling of potatoes impacted the quality of chips and led to wastage. There was no way of adjusting the machine parameters to peel off the right thickness and get consistent quality.

\ **Inability to automate plant parameters:** The current system required a lot of manual observations and adjustments to the plant parameters. It was time-consuming and error-prone, with no continuous quality checks.

Our Solution

Tiger Analytics followed a three-step model to enable the client to leverage Deep Learning to enhance the quality and throughput of their chips.

The first step involved **Model Training for Image Processing and Controls Adjustment**, in which the team gathered and annotated the images of the peeling process. An algorithm was designed to calculate the peel percentage, with a formula to determine appropriate parameter adjustments in peeler hardware. It helped optimize the model training process with continuous data.

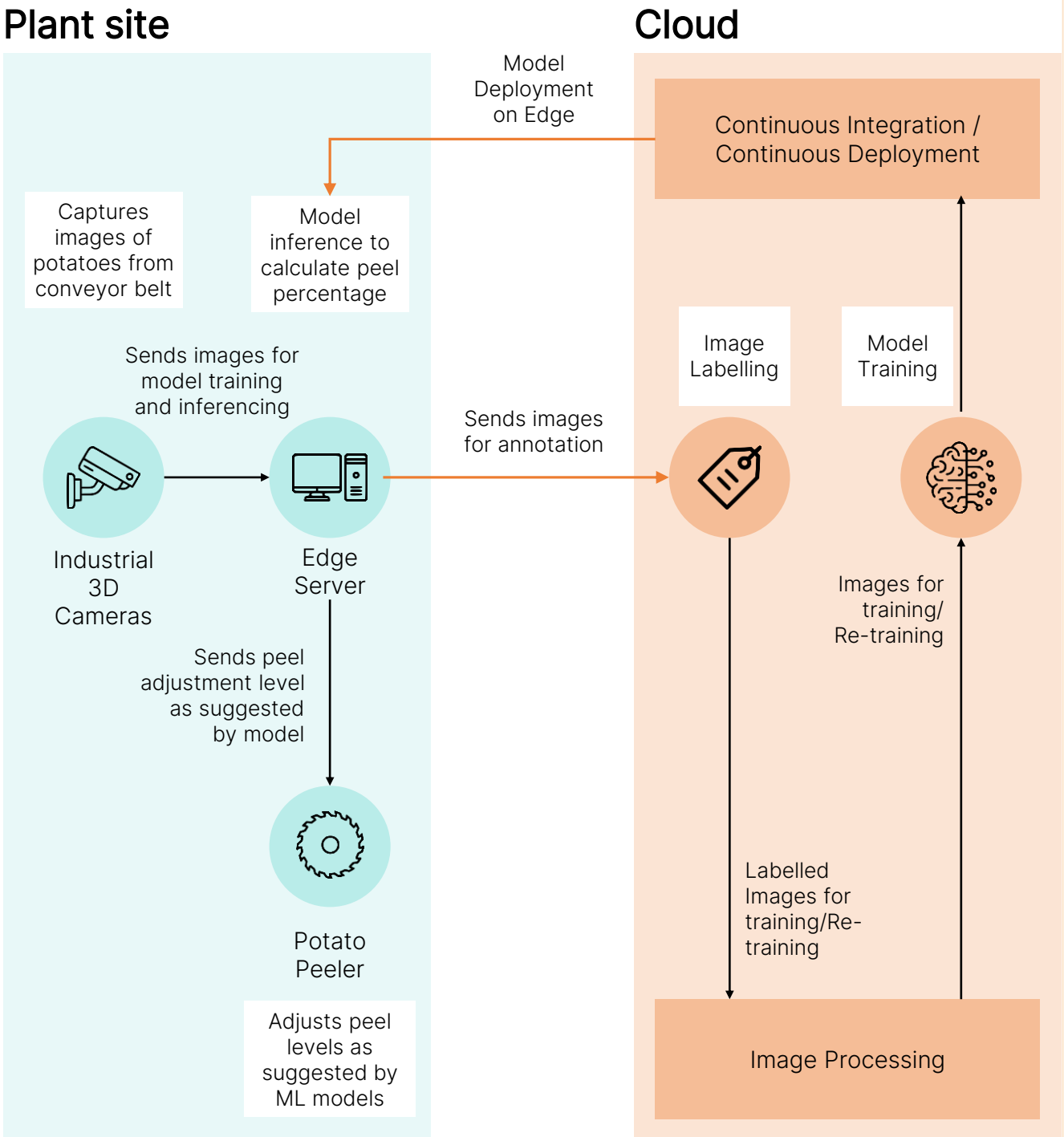
The next step involved **Model Deployment and Inference on the Edge**. Once the models were trained, an automated pipeline was used to deploy these models on the edge server, after which model inferencing took place to identify peel levels directly on the edge devices. Based on the model inference of peel levels, commands were passed directly from the edge server to the peeler for peel-level adjustments.

The third step involved **Model Retraining** to ensure model accuracy by setting up model monitoring and retraining with a no-code model approach. The new images from the manufacturing pipeline were continuously collected and annotated before getting fed into the model retraining pipeline as the models were retrained. The new models were deployed on the edge server via automated deployment pipelines.

Tech Stack

- Azure IoT Hub
- Azure Data Factory
- Azure Machine Learning
- Databricks
- Azure Blob

Solution Architecture



Value Delivered

75% of the manual effort was reduced, making the process more error-proof.

Wastage due to excessive peeling was minimized, as the quality of chips significantly improved.

Continuous quality monitoring was enabled in the manufacturing process.

About Tiger Analytics

Tiger Analytics is a global leader in AI and analytics, helping Fortune 1000 companies solve their toughest challenges. We offer full-stack AI and analytics services & solutions to help businesses achieve real outcomes and value at scale. We are on a mission to push the boundaries of what AI and analytics can do to help enterprises navigate uncertainty and move forward decisively. Our purpose is to ***provide certainty to shape a better tomorrow.***

Being a recipient of multiple industry awards and recognitions, we have 4000+ technologists and consultants, working from multiple cities in 5 continents.

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