



## Project Overview

In the manufacturing industry, some processes require human intervention, which meant the presence of human error and quality deviations. Our project aims to eliminate the problem of item miscounting due to human error and to enhance quality control in the production line through **Video Analytics as a Proof-of-Concept (POC)**. The target company is CP Foods, a F&B company, with the counting, classification and tracking of its sausages as the use case. Skills applied were C# programming, React.js framework, Computer Vision, software development lifecycle (SDLC) and Scrum project management.

## Objectives

The solution will allow ABB to:



Possess adaptable object detection capability



Integrate tracking capability into their existing solution

## POC Context

### Use Case (as provided by ABB)



CP Foods has large quotas to meet every month



Manual checking of production line to ensure no mistakes



Any defect found is sent back to the start

### Issues



Repetitive nature of work and long working hours caused fatigue



Over-reliance on manpower and no safety net in QC/QA phase, thus prone to error

## Methodology

Following Scrum software development



Requirements Definition



Output Analysis



Research on Tech Stack



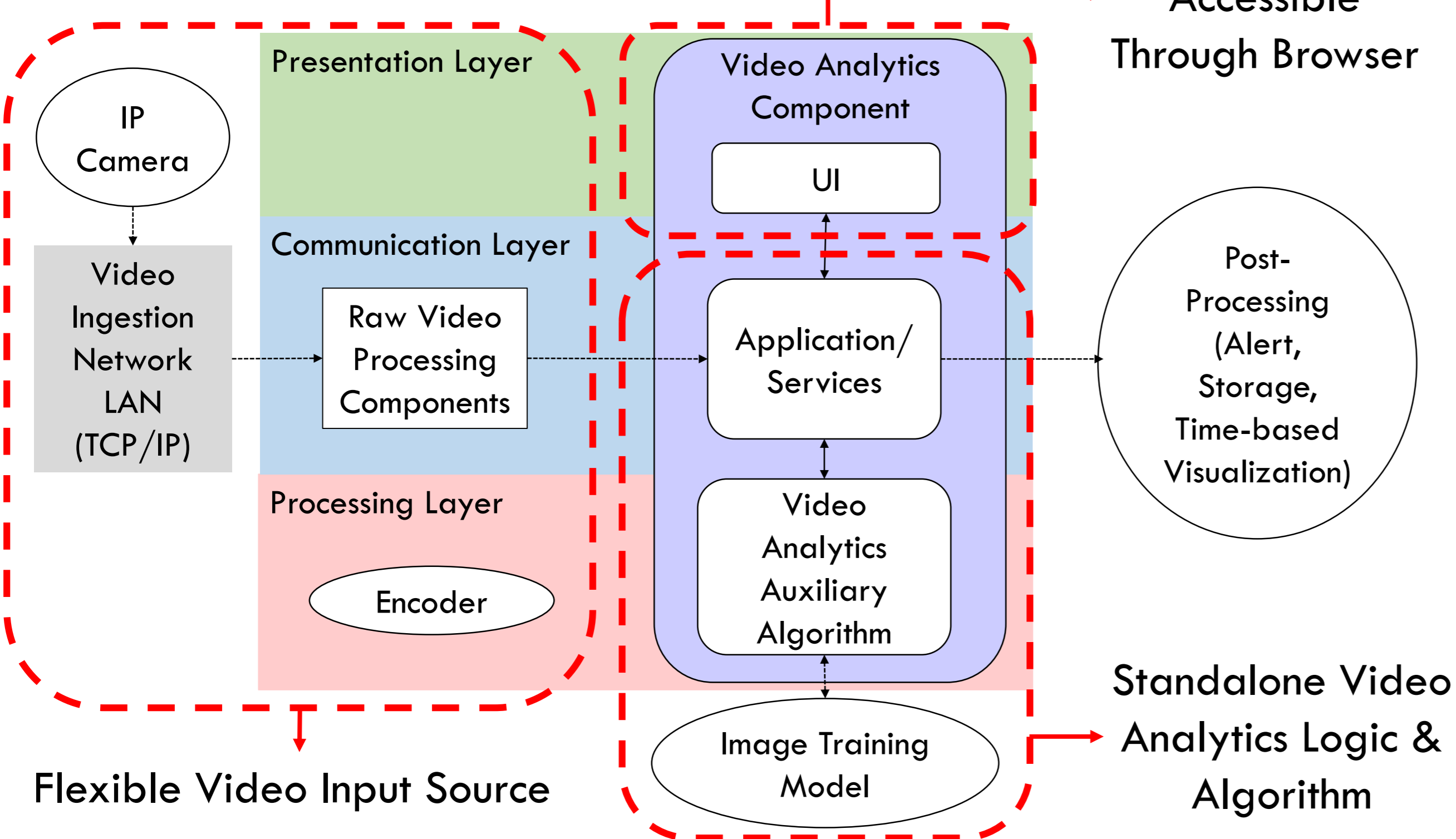
Model Training and Testing



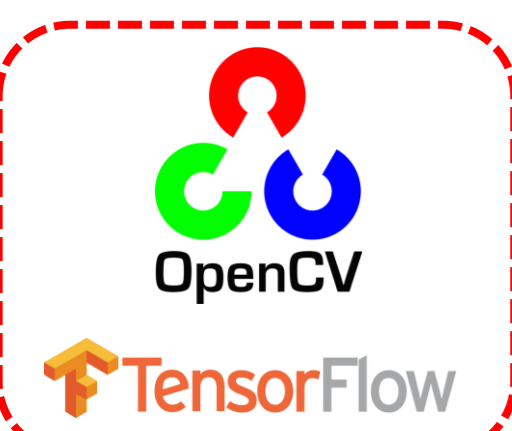
Algorithm and Model Development

## Proposed Solution

### Architecture



### Algorithm



Library for Object Identification

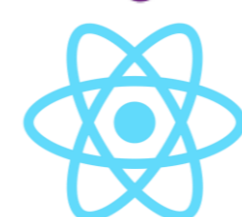


Self-programmed Object Tracking

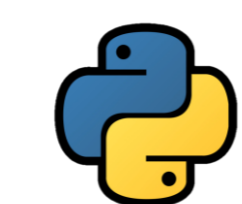
### Tech Stack



ASP.NET C#

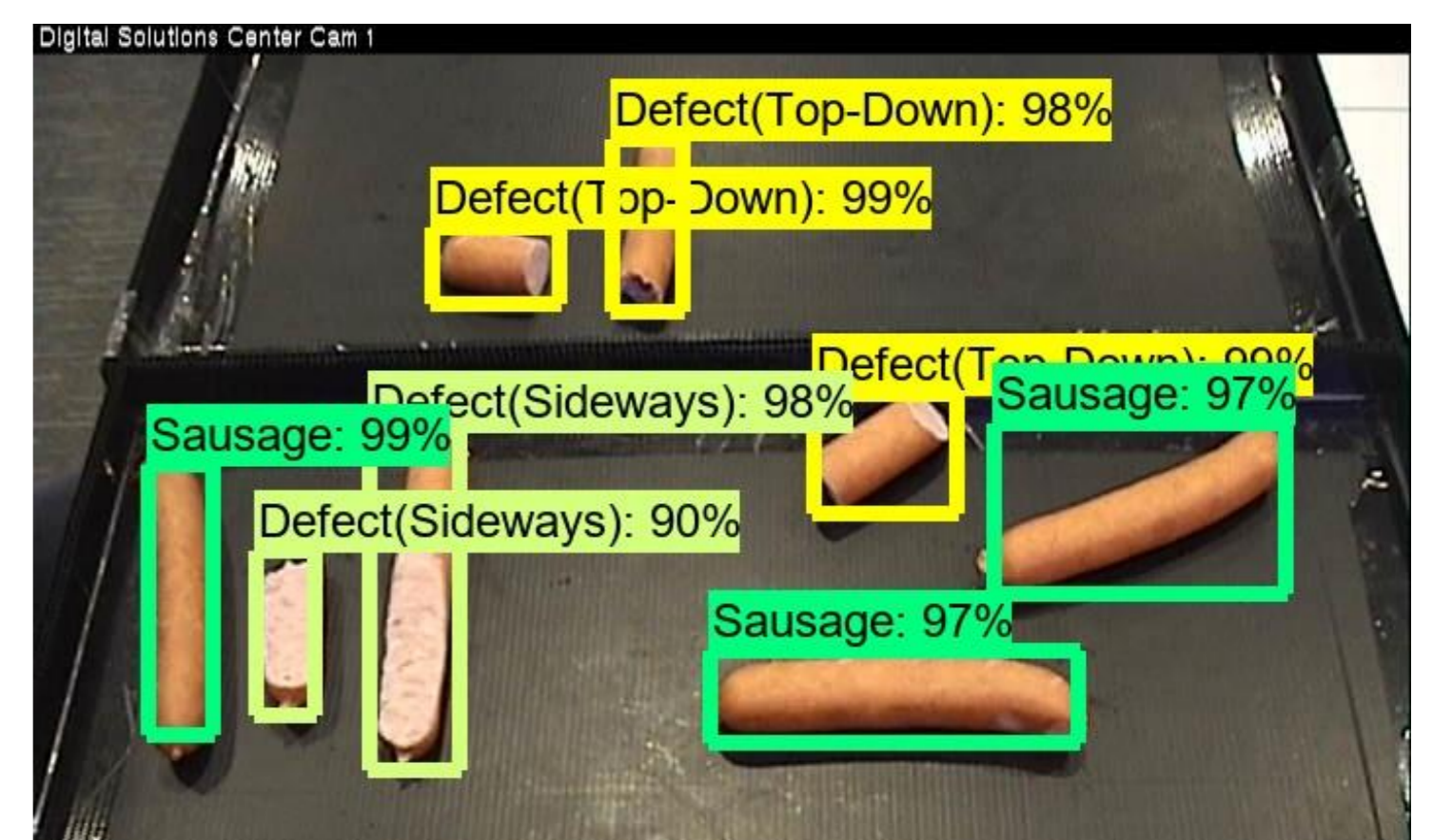


React.js



Python

## Performance Analysis



120ms

Time to detect

30ms

Time to track and count

98.4%

Count accuracy

95.8%

Classification accuracy

### Further Improvements

- Applications in other industries (automotive, healthcare etc.) and for other use cases (eg. utilising the audio component of the video feed)
- Integrate solution with currently available product line and with post-processing components
- Develop alternative tracking algorithms (eg. using graph theory, batch-based analysis of detection)
- Explore technologies other than TensorFlow