indium
Make Technology Work

Video Analytics with In-store CCTV camera feed for Sports Goods Retailer

Digital Services

Success Story

Status Quo

The client is a French sporting goods retailer, with over 1,500 stores in 45+ countries. They are one of the largest sporting goods retailer in the world. The retailer stocks a wide range of sporting goods, from tennis rackets to advanced scuba diving equipment. The group also owns over 20+ brands, with research and development facilities all over France to develop the latest innovative designs.

Being in the fast-moving retail market, the change in market strategies and business decisions should be fast enough. For this there is a requirement of real time visitor statistics. While the footfall data itself helps in analysis, the company wanted to take it to the next level by linking the footfall with point-of-sale (POS) data. This required a simple yet robust solution generating accurate results.

Project Overview

This project entails building a cognitive analytics model leveraging security cameras across the store to generate store heat-maps, visualization signifying where customers spent the most time in a store and understanding the variation in footfalls by area of the store, time of the day etc. Identifying returning customers by facial recognition and tracking how many customers exit the store without making a physical purchase was also implemented.

Business Requirements

The client wanted a solution to make use of the available data to achieve the following goals:

- Leverage security cameras across the store to generate a store heat-map.
- Leverage CCTV camera data to understand the variations in footfall by area of the store and time of the day.
- Identify customers using facial recognition to know the number of customers leaving the store without making a physical purchase.

Solution

Indium analyzed the video feed data collected from the cameras installed on the shop floor and modeled a solution that leveraged the data to fulfil business use cases

- Use ImageAI to empower security cameras to count the number of customers who enter the store at a given time period. Additionally, customized functionality can be incorporated to count the number of customers who perform a certain activity, such as walk into a certain part of the shop.
- Build Neural network model for video analytics and image processing.
- Analyze and optimize the effectiveness of the model to improve accuracy.

Business
Cognitive Analytics

Domain
Sports Goods Retailer

Tools
Python, Neural Networks, OpenCV, TensorFlow, Keras

Key Highlights
- More than 80% accuracy in the models targeting customer behavior
- Nearly 15% increase in customer satisfaction, from better targeting of customers and improved customer engagement
- 70% cost savings from the technology choices

- Identify outliers in the data points gathered.
- Pattern recognition around various shelf zones.
- Each layer of Neural Network was built by training various classes of the object or person, where 2000+ images are used.
- Annotations were created and tested using sample videos. More the number of videos used in this model, higher its accuracy level over time.

- The easy to use User Interface enabled all stakeholders to get a better insight into customer's behavioral as well as shelf zone analysis.
- 70% cost savings in short and long-term as the tools used in the project were open source.
- Highly comprehensive dashboards with real-time data refresh, tailored to the client's analytical and business needs.

Business Impact

- More than 80% accuracy was achieved in the models targeting customer behavior, which led to better targeting of customers and improved customer engagement.
- Comprehensive analysis on the conversion rate from visitor statistics to live sales via the POS systems, and analysis of customer interaction in any product section and the product-wise conversion rate, helped improve product placement and cross-selling across product categories.
- Nearly a 15% increase in customer satisfaction post implementation.

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