Retail Customer Detection using surveillance cameras Based on Deep Learning Approach

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Today, big data in retail is being used to shape the customer experience, making life easier and more interesting for shoppers. Starting with people counting devices at store entrances and moving on to various location-based technologies that employ Wi-Fi and Bluetooth to monitor shopper movement, retailers can build a comprehensive picture of their customers' movements. Shopping center footfall data and in-store analytics then become key to generating a better customer journey, leading to increased sales and profitability.

From the last decade, the technology in the computer vision system and deep/machine learning become a keyword nowadays because of the state-of-the-art results in the area of image classification, object detection, and natural language processing. One of the most popular and hot topics in this area is object detection which is alone includes an extensive region like human detection, face detection, pedestrian detection, customer detection. Deep learning and machine learning works based on a huge amount of positive and negative samples (images) for model training. There are several robust algorithms which work in the image processing area like Convolutional Neural Network (CNN). CNN is a supervised learning machine which is work based on raw data for training and learning.

Nowadays, a well-known company tries to know how the customer makes the decision to choose a product or how can attract customer to buy products. Use footfall analytics to understand the share of overall traffic your stores are attracting. Assess how well your store is performing against industry benchmarks, nearby and nationwide. Find out how long shoppers stay in one place, and where to encourage them to buy. Identify how shoppers behave throughout the store and see where they spend their time. Also, we can be able to analyze customer based on gender (male and female) which will be useful to know that how many percentages of meal or female visit this place.

The objective of this research using object detection based on the computer vision system and deep learning to control and analyze the behavior of the shoppers in the shopping center. Finding the region of interesting, gender detection, counting people and finding density area.