

## Chapter 3

# Applications of Intelligent Video Analytics in the Field of Retail Management: A Study

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### **ABSTRACT**

*Recent technologies in the market trends have demanded the significant need for the possible solutions to intelligent video cameras that are nothing but intelligent video analytics. Today in the retail industry, intelligent video analytics has gone beyond the tradition of the domain of security and loss prevention by providing retailers insightful business intelligence such as store traffic statistics and queue data. This provides accurate and reliable information by monitoring continuously through a large number of video cameras events that human operators or employees can overlook. This paper gives an overview study of applications of intelligent video analytics in retail management as well as the state-of-the-art computer vision techniques behind them to analyze the data. It clearly demonstrates that the importance of the role that intelligent video systems and analytics play can be found in a variety of applications of intelligent video Analytics in the field of Retail Management.*

### **INTRODUCTION**

Recent technology trends in the market have created a significant need for intelligent videos and cameras, which in turn has given rise to need for intelligent video analytics. This white paper attempts to provide a comprehensive account of study and application of intelligent video analytics in the field of retail management. Today in the retail industry, intelligent video analytics has gone beyond the traditional domain of product security and loss prevention, and has drifted into the field of Datascience, by providing the retailers with business intelligence, such as store traffic statistics and queue data. The analytics

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utilizes the video system architecture employed, to enhance the utility of security and other available surveillance solutions. This architecture involves: automatically monitoring the video of people, vehicle and other objects, and tracking their behavior within the field of view of the camera. Intelligent video analytics continuously monitor the data provided by these cameras thus ensuring extremely high levels of security and efficiency all around the clock. This level of minute monitoring, 24X7, and without virtually any data outages, involves keeping a track of huge amount of data, which would otherwise have been humanly impossible to do. The event of overlooking a tiny but important detail due to human error by oversight, fatigue or slow processing of information, is completely eliminated. We can with mounting certainty claim that the way the intelligent video analytics is currently developing; that it will improve the efficiency of the overall retail processes and help to secure retail industry. Thus, this will lead to prevention of shrinkages, better-merchandising management and optimized facility utilisation.

This paper gives an overview of the study of applications of intelligent video analytics in retail management as well as the study of the state-of-the-art computer vision techniques utilized behind the scenes to analyze the data. It clearly demonstrates that the importance of the role that intelligent video systems and analytics play can be found in a variety of applications of intelligent video Analytics in the field of Retail Management.

## **BACKGROUND**

Few years ago, when big data was in its nascent state it had constricted utilization, even though there were technological products available which could capture data at the magnitude at which Big Data is really capable of working with. The major reason for this paucity was the limited tools available at the disposal of the organizations to understand and explore the information that lay underneath this heap of data. That is to say people knew they had a lot of information under this abundance of data, they knew the importance of Bigdata, they were ready to discover facts; however, they did not know how to extract these facts from the available mound (Adams 2007). This obviously was the most important task at hand for the organization. Even now with the advancement in Bigdata analytics, there is yet a lot of potential learning which is still hidden in plain sight. So, when did the companies steer towards understanding their own, easily available but for long forgotten or unused data? Well! That was right after the recent economic recession (Adams 2010). The weak economy forced deep changes into almost every industry and across the globe, the burden of change was heavier on those businesses which were customer facing and especially those that were dependent on bulk purchasing (Spindler 2008). These later group of companies needed to know the expected trends in purchases of their customer segments, to make any changes or decisions on what to do and how to transform their businesses in future, if at all. Using advanced analysis techniques, they can now do exactly this. The study of big data helps them understand the industry trends, and current and future expected states of their businesses and customer expectations (by looking at customer behavior trends). If one wants to know what exactly is happening or going to happen to their business, their customer their industry, one needs large volumes of highly detailed data, and advanced analytics to extract meaning out of the data (Adams 2012).

Some of these untapped data seems foreign to most business till they are shown how useful it can be to them. Most of often than not it is not the lack of data that a company suffers from, but from a lack of analytical tool to tell them what this data really means. Though it is the size of the data stored that

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