

**SAMARITAN: A REAL-TIME CCTV STREAM
ANALYTICS ENGINE FOR SUSPECT DETECTION**

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Abstract

Most of the public areas such as roads, airports, bus stands, railway stations and office buildings are covered with huge network of CCTV cameras nowadays and enormous amount of video surveillance data is produced every moment. Since these devices do not have any intelligence, manual monitoring by human is required to detect any alarming activity. But it is not very feasible due to human resources limitation. Since there is no mechanism to monitor all these CCTV feeds manually, lot of terrorist activities and criminal activities have not been prevented before it is too late. Therefore, the requirement to analyze large amount of surveillance data in real-time is increasing day by day.

Some of the researchers have implemented intelligent frameworks which were capable of identifying suspicious behaviors of persons by analyzing a video. Also, there have been a lot of researches for facial recognition. But still these systems have not been enhanced to analyses video streams of broad CCTV networks in real-time. Therefore, failure to analyze large amounts of CCTV streaming data for known suspects and monitor human activities in real-time have become a major problem. However, the proposed engine, which is introduced as Samaritan, addresses the problem stated earlier through an intelligent real time data processing engine which analyses CCTV streaming data in real time and identify pre-known faces and suspicious activities conducted by criminals or terrorists. Also, it is capable of alerting the authorities, in case any suspicious activity is detected in CCTV feeds.

In the proposed system, large amounts of video streaming data are handled by a centralized consumer, which is built on top of Apache Kafka. Then deep learning techniques were used to perform facial recognition and human action classification for video streams. First of all, the system trains a model from the face images of known suspects and then those faces will be recognized in CCTV surveillance video streams which are fed in to the real-time video analytics engine. Next, Samaritan classifies suspicious activities in CCTV video feeds based on a deep learning model that was pre-trained with suspicious activity datasets. Then the proposed system is able to identify suspicious activities of CCTV streaming data. By combining these features in to the

real time big data CCTV stream analytics engine, it is able to identify suspicious activities of a CCTV surveillance videos and known faces in real-time and inform the authorities when necessary. Finally, the evaluations describe that the proposed system is efficient and accurate.

Keywords: Big data, Real-time analysis, Computer vision, Deep learning