Chapter 9
Social Perspective of Suspicious Activity Detection in Facial Analysis:
An ML-Based Approach for Digital Transformation

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ABSTRACT

Technology is demanded on to curb crimes, especially image recognition, which can be used to detect suspicious activities. Image, object, and face recognition along with speech identification can be used as great tools to achieve this target. The machine lerning algorithm gave immense capabilities to detect faces, objects, and speech to identify malicious activities, and with several epochs, the accuracy can be enhanced. The chapter applies the various ML algorithms on real-time video data to increase the accuracy and gets satisfactory results in this social cause of utmost importance.

INTRODUCTION

Suspicious Activity

The chapter describes initially the basics of initial crime status at world, face recognition and its tells and techniques, machine learning and data analytics and its tool and techniques. For ease of audiences, it also gives a brief review of Data mining, Regressions, AI and CPS. In Next section of the literature review, the famous authors and gist of their work on the content have been enlisted. Then in the application

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section, the latest classification techniques of support SVM, Dlib, CNN and RNN has been introduced and their application on the data set is reflected. In the result section, the different emotions and object have been recognized and their accuracy has been discussed. Then in the later part the recommendations, novelty, application, limitations have of the research work is explained followed by concluding remarks.

Face Recognition

The world is witnessing an unprecedented growth of cyber-physical systems (CPS), which are foreseen to revolutionize our world via creating new services and applications in a variety of sectors such as environmental monitoring, mobile health systems, and intelligent transportation systems and so on. The information and communication technology (ICT) sector is experiencing significant growth in data traffic, driven by the widespread usage of smartphones, tablets and video streaming, along with the significant growth of sensors deployments that are anticipated soon (Onsen Toyger et al., 2003) (Viola, P. et al., 2004).

Machine Learning

An agent is said to learn from experience (E) for some class of tasks(T) performance measure(P), if its Performance at tasks T, as measured by P, improves with experience. E.g. Playing checkers game, Mailing system (Tom Mitchell 1997).

There are different categories of m/c learning

1.Supervised learning-learn an input and output map (classification: categorical output, regression: continuous output).

2. Unsupervised learning-discover patterns in the data(clustering: cohesive grouping, --association: frequent co-occurrence)
3. Reinforcement learning-learning control

Data Analysis

This is the technique used for extracting useful, relevant, and meaningful information from the huge amount of data in a systematic manner. For the purpose, Parameter estimation (inferring the unknowns), Model development and prediction (forecasting), Feature identification and classification, Hypothesis testing and Fault detection

Tools of Data Analysis: Weka, R, Python

Python is an object-oriented high-level programming language and widely used with semantic dynamic, used for general-purpose programming. It is interpreted programming language. It is used for: web development (server-side), software development. The way to run a python file is like this on the command line:

```
helloworld.py
print ("Hello, World!")
```