



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 6, June 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.512**



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# Employee Behaviour Monitoring and Prediction Using Sentiment Analysis - Implementation and Result

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**ABSTRACT:** Employers have used a variety of methods to monitor their employees for a variety of reasons. Reasons range from researching appropriate email and Internet usage to gathering information about productivity, reliability, employee engagement, location and health. In many ways, the problem is the same regardless of the skill level used to track and analyse the results. Undoubtedly, these tools will be of great help to recruiters looking to understand their business models and team inefficiencies. AI gives this speed, new perspectives and objectivity. However, there are legal challenges to using only the hard and cold data generated by technology to evaluate performance or using AI-based analytics to manage remote employees. The main companies operate within the framework of the European Convention on Human Rights and data protection law. Excessive, unnecessary, or unreasonable supervision is incorrect for the two. Relevance is important in determining the Legality of an employer's actions.

## I. INTRODUCTION

Today more and more people can use text emoticons to express emotions or to sum up words or something. Previous machine learning techniques only included classification of text, emoticons, or images, but emoticons attached to text were always ignored and many emotions were ignored. In this study, we proposed an algorithm and a sentiment analysis method using both text and emoticons. This work uses both machine learning and deep learning algorithms to find emotions in Twitter-based aerial data using features such as TF-IDF, N Word Bag Emoticon Vocabulary -gram, etc., by combining the data from the two modes and analysing them individually. This study shows that whenever an emoticon is used, the emotion associated with it dominates the emotion conveyed by textual data analysis. Moreover, deep learning algorithms are superior to machine learning algorithms. An area of machine learning can be simply defined for a computer to do. Successful predictions based on past experience have made significant progress in recent years with the rapid increase in computer processing and storage power. Machine learning techniques, along with many other disciplines, are widely used in bioinformatics. The difficulty and expense of bioanalysis has led to the development of advanced machine learning approaches for this application. This chapter first looks at machine learning basics such as functional assessment, unsupervised and supervised learning, and types of classifiers. Next, we highlight key issues in designing machine learning experiences and evaluating performance. Finally, there is the supervised learning method. Explain managed ML techniques, diagram them, study them to predict relevant representative behaviours, and provide expectations using predictive surveys. One of the best courses in Natural Language Processing (NLP) is hypothesis testing or evaluation exploration. Recently, sentimental research has been attracting attention. In this article, we developed a module for predicting employee behaviour and analysing sentiment.

## II. RELATED WORK

### 2.1 EXISTING SYSTEM

Much of human effort has a personality and a diligent attitude. Therefore, effective and ethical treatment of work requires a framework for assigning work to different professionals, agents, or employees. The passive current state provides a significant portion of the need to monitor this government and its activities. So we used the emotional assessments we investigated in the literature review to build a module to control these types of problems and recommendations. Summarize using sentiment analysis. Also, current devices suffer from much less accuracy, provide turnover for one employee, do not provide real-time results, cannot provide employee face-based behaviour, and pre-

statistics. There is also no protocol for rules and regulations. There is no privacy anymore. And also there is no more used of trending and advanced technology.

## 2.2 PROPOSED SYSTEM

Development of presentation innovations, but everything in the universe has been computerized. As you can see, we needed a framework capable of processing data on a significant number of employees and their activities. This project improves the recording's mission of tracking previous and updated data and adds behavioural prediction based on the camera's facial recognition. The strategy is to predict workers' behaviour and monitor their activities. The purpose of this system is:

- Design filtered data content suitable for ML modules (using multiple algorithms and methodologies) trained to predict future employee behaviour through appraisal and prediction, and multiple Predict employee business behaviour based on attributes.
- The Module design uses a proprietary algorithm to demonstrate accuracy.
- Based on recent and previous data, design a module that shows the overall performance of the worker.
- Use the trained algorithm module to design a module that provides accurate and reliable output. Detect pre- and recent withdrawal and apply sentiment analysis to predict.

## III. PROBLEM STATEMENT

Building a proper filtered data set for training Machine learning module using various kind of algorithm which gives prediction of future behaviour of employee bases on his working behaviour attributes (monitoring) and used sentiment analysis using machine learning by image briefing technique (sentiment analysis prediction). Design a module whose shows the employee performance according their recent data as well as previous data

## IV. GOAL AND OBJECTIVE

- Machine learning has given the computer systems the abilities to automatically learn without being explicitly programmed. But how does a machine learning system work? So, it can be described using the factors of machine learning. Machine learning factors is a stepwise process to build an efficient machine learning project. The main purpose of the ml is to find a solution to the problem or project. Machine learning life involves seven major steps, which are Gathering Data, Analyse Data, Data preparation Data Wrangling, Train the model 6. Test the model, Deployment 8. Feedback
- Design a proper filtered data asset for trained ML module (using classifier and methods and algorithm which predicts future behaviour of employee by using sentiment analysis and predict employees working behaviour according to various attributes and graph.
- Design a module which provide accuracy using different algorithm.

## V. SCOPE OF THE PROJECT

- The system takes user or employee data as input as a set of parameters that the application can use, i.e. attributes such as name, address, and uid.
- The system finds the correct input for the salesperson, applies the algorithm, and then trains the module.
- Each procedure is independent of each other and should be carried out systematically after predicting the outcome and providing accuracy.
- Employee behaviour can be easily observed through sentiment analysis that indirectly affects employee turnover.
- Algorithms and predictions make tracking easier
- Recipient statistics cannot be overcome using the protocol.
- Security protocols and accuracy are affected by the employee recruitment process.

## VI. METHODOLOGY

### 6.1. CASCADE ALGORITHM

Haar Cascade Classifier is an efficient way to detect objects. This method was suggested in a paper by Paul Viola and Michael Jones on Fast Object Detection using a simple Boosted Cascade function. Haar Cascade is a machine learning-based approach for training classifiers with large numbers of negative and positive images.

- Positive Image - This image contains the image identified by the classifier.
- Negative image-Other image does not contain the object you want to detect

One needs to find the exact coordinates of facial features such as the center of the pupil, the inner and outer corners of the eye, and the upper part of the hairline. These coordinates are used to calculate the 20 distances, including the width of the mouth and eyes. Therefore, a person can process about 40 images per hour and build a database of calculated distances. The computer then automatically compares the distances in each photo, calculates the distance difference, and returns a closed record that may match. So what is the Haar Cascade? Object detection algorithms are used to identify faces in live images or videos. The algorithm for using edge or line detection was proposed by Viola and Jones in a 2001 research article, Fast Object Detection Using Simple Feature Enhancement Layers. The algorithm can be trained on multiple positive images, including the face. The Haar calculation is done by finding the difference between the average pixel value in the shadows and the average pixel value in the highlights. If the difference is close to 1, the haar function has detected an edge.

### 6.2.K-NEAREST NEIGHBOURS ALGORITHM

apply the K-NN classifier to the training data. To do this, import the KNeighborsClassifier class from the Sklearn Neighbours library. After importing the class, create a classifier for the class. The parameters of this class are

n\_neighbors: Determines the required neighborhoods for the algorithm. Usually 5 are required

metric = 'minkowski': Default parameter which determines the distance between points.

p = 2: Identical to the standard Euclidean metric.

There is no special way to determine the optimal value for "K". So you have can try multiple values and find the best solution. The most preferred value for K is 5. Very low values of K, such as K = 1 and K = 2, are noisy and can lead to model outliers. High K values are fine, but can cause problems.

## VII. SPECIFICATION OF THE SYSTEM

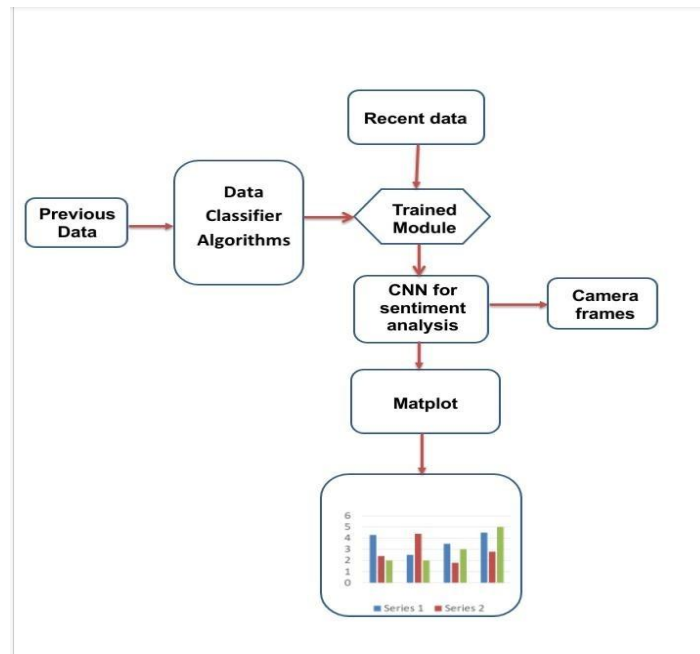
### ➤ Hardware Requirement:

System	:	Pentium IV 2.4 GHz.
Hard Disk	:	40 GB.
Monitor	:	15 VGA Colour.
Ram	:	4 GB.

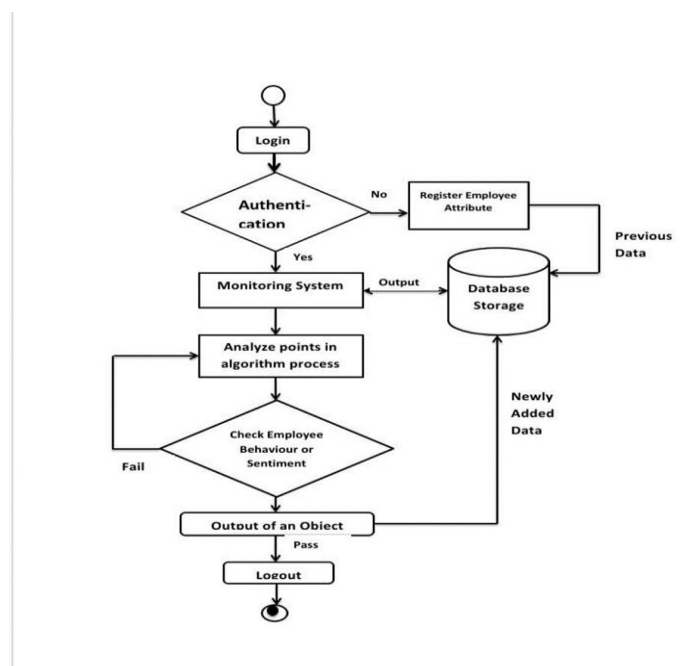
### ➤ Software Requirement:

Operating system	:	Ubuntu 16.04
Coding Language	:	PYTHON
IDE	:	PyQT
FRONTEND	:	PYTHON
BACKEND	:	MYSQL WORKBENCH

## VIII. ARCHITECTURE DESIGN



## ARCHIETCTURE OF MODULE



## FLOWCHART OF MODULE

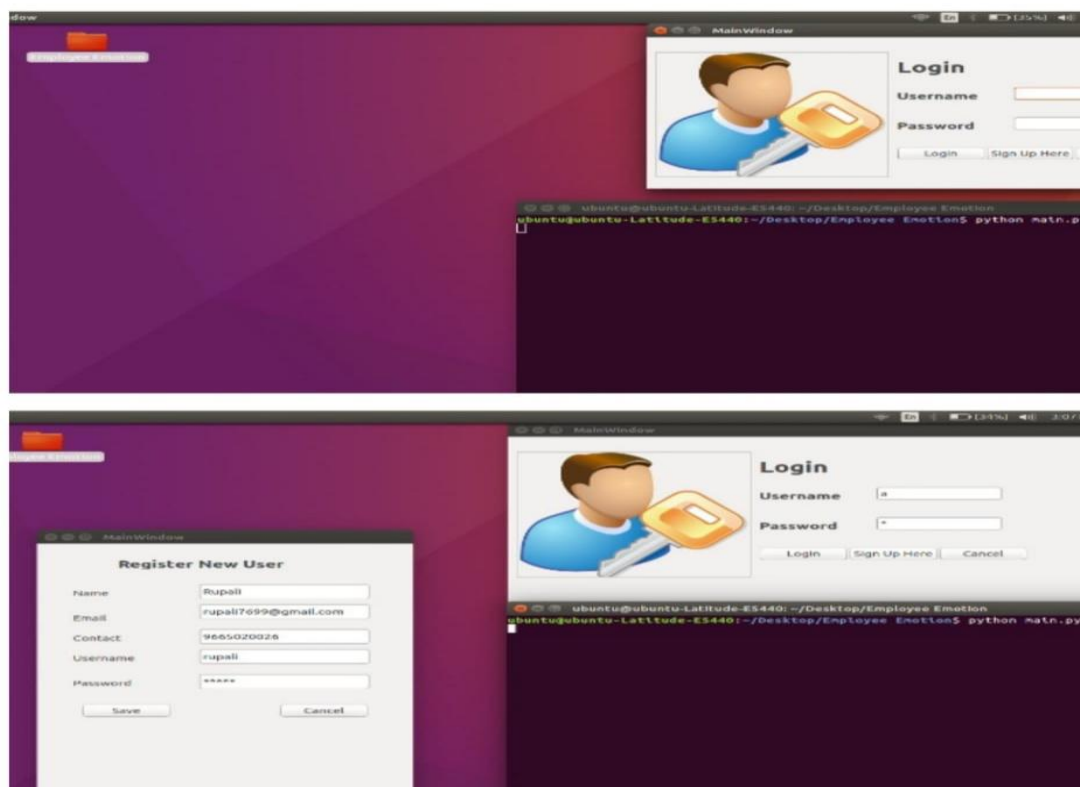


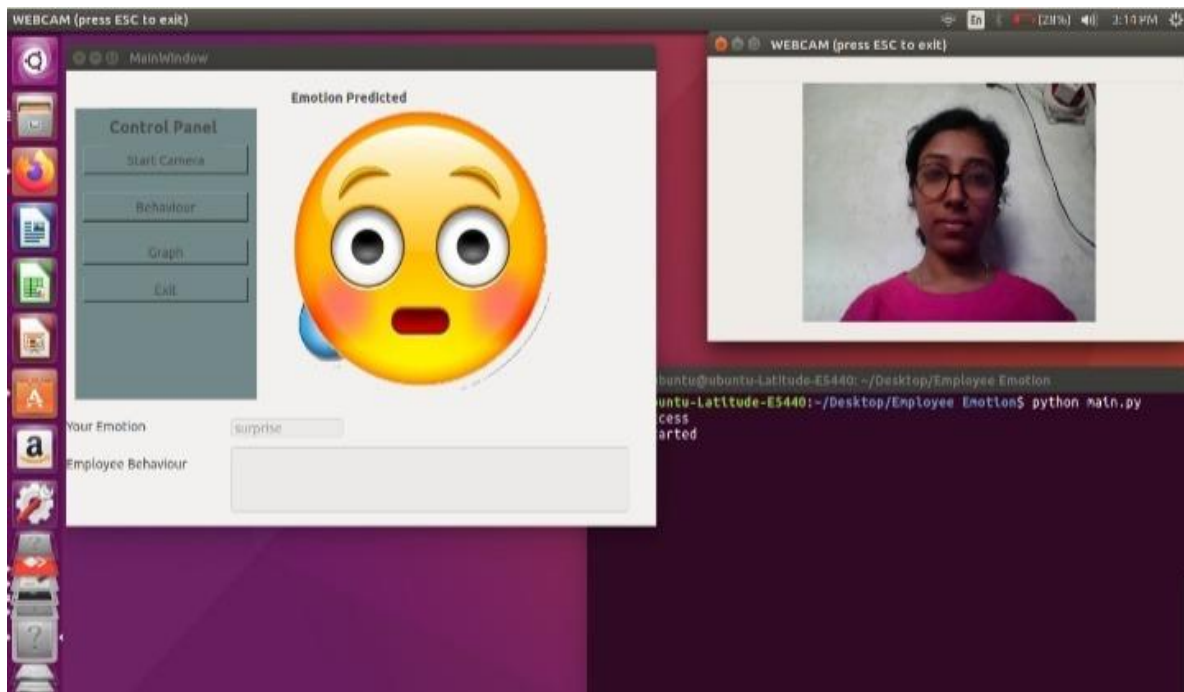
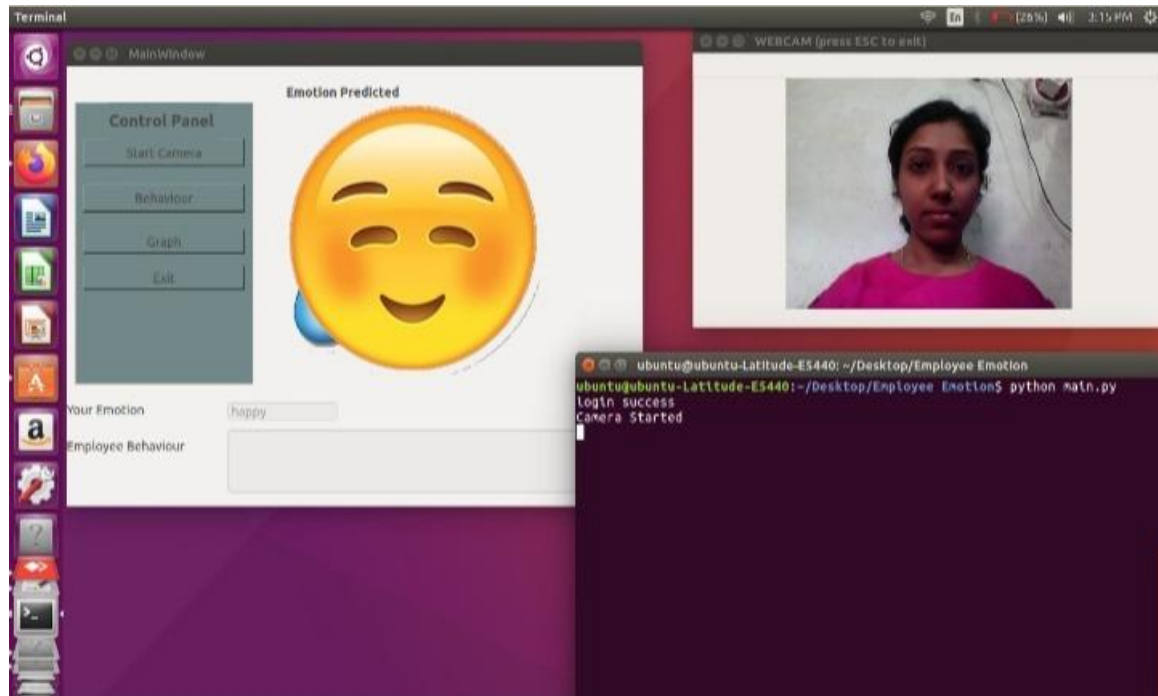
## 8. ARCHITECTURE DESIGN

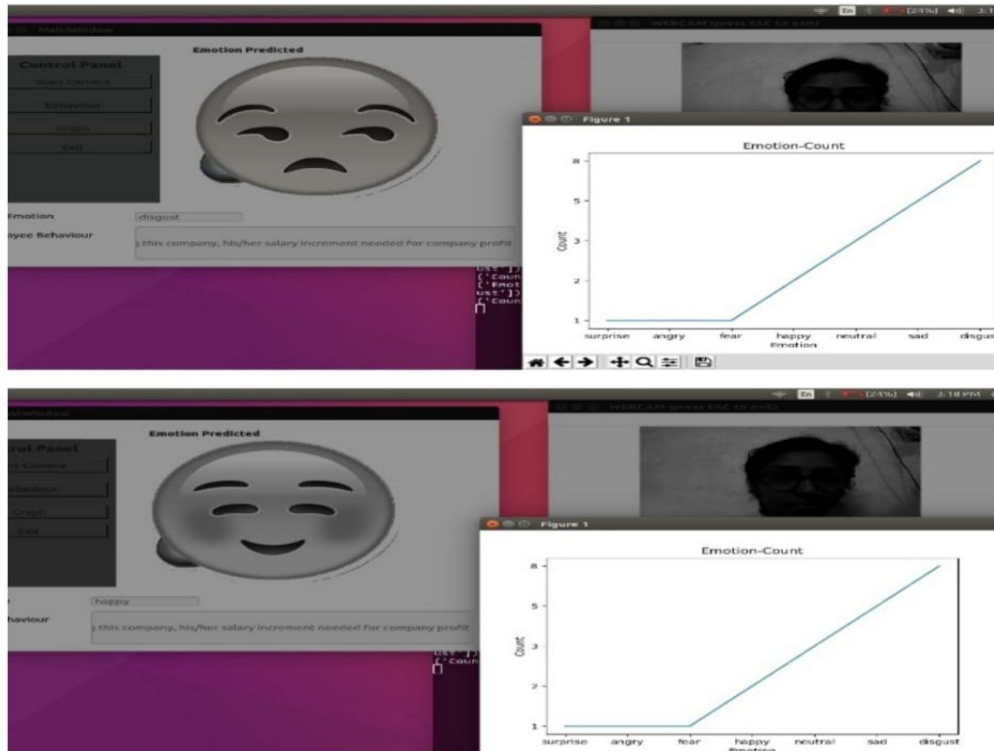
Some people companies have a number of characters and difficult works. In addition, implementation of your job properly, new services must be formed to different experts, representatives must be formed. For now, the nature of the book has provided the main thing to need this administrative and maintain your business. And so, we have built these species and we **have provided us to use the evaluation of the evolution**, and we learn that we can pay some important things. Position to identify an employee when is responsible for the assistance of emotions. In these architecture we can see the data classifier algorithm are work together which is haar cascade and knn both are used for prediction and sentiment analysis and by using access of camera means image briefing technique can used for the sentiment analysis. And its provide accuracy to the output as per input . When the module is ready to perform sentiment analysis, you can capture an image of the employee when faced with sentiment analysis. You can use the PyQt IDE for all your coding and many class libraries are provided to ensure accuracy

## IX. IMPEMENATATION AND RESULT

If you following picture we can see the terminal part which shows us a python main file which will be executed and also, we see several files of database and server connectivity and also content. These is admin side project and also content gives us a complete information of employee as the name of module they can monitored the employee data and save the data after that when employee can work with there own system and then they can analysis the face expression and behaviour of employee by using emotion detection and OpenCV technique in the haar method which gives in the cascade classifier in python in machine learning. according to sentiment analysis they shows a employee next move like he\she quit the job or he is happy or he is disguises by working load or they need recommendations .so here just because of these technique we can observe the employee behaviour as well as performance and next move it gives useful uses to a any kind of company means this is option of employee attrition problem







## X. CONCLUSION

In this article, we used computer equipment proficiency strategies to monitor employee behaviour and enable new elements of sentiment analysis to meet previous requirements. Using this plan, supervisors can expose point employees, show them what they are doing, and predict what they will do next. This is why we devised the model. This module provides real-time accuracy, efficiency, and system properties through education and snapshot modules to ensure worker behaviour in everyday life that is not only suitable for employees, but also beneficial to all organizations. Detect. This article primarily provides algorithms, methods, and emoji pre- (both text and emoji) for analysing emotions. For example, aviation data collected on Twitter. This study also shows the impact of considering emoticons along with text when analysing emotions. The study was done using ML and CNN algorithms. The proposed system applies certain features and models of collected comments based on text and emoticons to identify emotions. The overall results show that considering emoticons with text has a positive impact on sentiment analysis. Haar Cascades can be used to explore any type of object as long as you have the appropriate XML file. You can also create your own XML file from scratch to find what kind of object you need. We also found that the DL algorithm outperforms the ML algorithm. Ultimately, this study outperforms existing studies. Huanghua's research can be extended to the field of multilingual data.

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