DETECTION OF IT EMPLOYEE STRESS USING CNN MODEL ENGINEERING

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Abstract:

The main motive of our project is to detect stress in the IT professionals using vivid Machine learning and Image processing techniques. The existing system is an upgraded version of the old stress detection systems which excluded the live detection and the personal counseling but this system comprises of live detection and periodic analysis of employees and detecting physical as well as mental stress levels in his/her by providing them with proper remedies for managing stress by providing survey form periodically. The proposed system mainly focuses on managing stress and making the working environment healthy and spontaneous for the employees and to get the best out of them during working hours. To measure worker stress by evaluating images given by verified clients. Following successful registration and logging in, the user sends the image and also uses the live cam. Following the transmission of the image, we will obtain the outcome of the anxiety on the top point of the limited box as irate, wretched, blissful, nauseating, and nonpartisan. We support this model with CNN Model Engineering. We employ CNN Model Engineering to predict model precision. Along with precision, we also anticipate, evaluate, f1, and disorder framework. We may supply appropriate cures for putting stress on executives, maintaining agents' working conditions sound and unrestricted, and abusingthemoveral.

I. INTRODUCTION

Computational with the use of image analysis techniques and machine learning representations of data at several degrees of complexity made possible by deep learning. These methods have considerably improved the state of the art in many other domains, including object identification, visual object recognition, voice recognition, connecting sDNA to drug discovery, and object identification. By employing a reverse propagation strategy to suggest changes to a tool's internal parameters that are used to define the model in each layer from the representation in the preceding layer, it may uncover sophisticated architectures in enormous data sets. Recurring nets have shed more insight into certain data categories including speech and text whereas

deep convolutional networks have improved at analyzing pictures, video, voice, and audio. selecting relevant search results, identifying objects in pictures, text-to-speech conversion, matching news stories, posts, or items with users' interests, and more. Such applications employ more and more of the deep training approach. The potential of conventional Data that was natural in its raw form could only be analyzed using limited machine learning techniques. Over the years, developing a feature extractor that transformed the raw data (such as the pixel Building pattern recognition or artificial intelligence system requires understanding the values of a picture system. This needed thorough design and in-depth subject-matter expertise.

II. Literature review

A review of literature on by tracking an individual's digital activities, such as their browsing history and the websites they visit, machine learning can detect patterns that may indicate stress. For example, if an individual's browsing activity suddenly shifts from work-related sites to online shopping or social media, this could be an indication of stress [12]. The model would then provide the individual with feedback and advice on how to better manage their stress. Using machine learning for stress detection can provide IT employees with a valuable resource to help them manage their stress. By detecting and responding to stress in a timely manner, IT employees can reduce their risk of developing long-term mental health issues and increase their overall wellbeing. Stress is a serious problem that can have a major impact on the health, productivity, and wellbeing of IT employees [13]. With the increasing prevalence of workplace stress, it is important to develop tools to detect and manage stress in IT employees [14]. One approach that has emerged in recent years is the use of machine learning to detect stress in IT employees. Machine learning is a type of artificial intelligence that uses data to make predictions and decisions. It can be used to detect patterns in data that would otherwise be difficult for humans to detect. In the context of stress detection, machine learning can be used to identify patterns in employee behavior and performance that can indicate stress levels. For example, machine learning algorithms can look for changes in daily routines, productivity, or communication patterns that could be indicative of stress [15]. The advantages of using machine learning for stress detection are numerous. First, machine learning algorithms can detect subtle changes in behavior and performance that may be difficult for humans to notice. This means that machine learning can capture stress levels in IT employees before they become too severe. Additionally, machine learning can be used to develop personalized interventions that can help reduce an employee's stress levels. However, there are also some potential drawbacks to using machine learning for stress detection. First, machine learning algorithms may be prone to false positives and false negatives, meaning that they may detect patterns that are not actually indicative of stress, or may fail to detect patterns that are indicative of stress [16]. Additionally, machine learning algorithms require a large amount of data in order to be effective, and this data must be carefully collected and stored in order to ensure accuracy. Overall, machine learning can be a powerful tool for the detection of stress in IT employees.

III. SYSTEM ARCHITECTURE

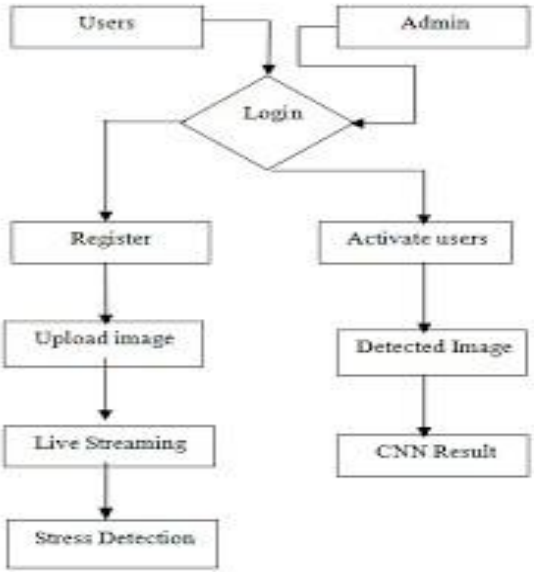


Fig : System Architecture

IV. PROPOSED ALGORITHM

Machine Learning:

K-Nearest Neighbor (KNN) is used for classification as well as regression analysis. It is a supervised learning algorithm which is used for predicting if a person needs treatment or not. KNN classifies the dependent variable based on how similar it is; independent variables are to a similar instance from the already known data. The KNN Classification can be called as a statistical model that uses a binary dependent variable. In classification analysis, KNN is estimating the parameters of a KNN model. Mathematically, a binary KNN model has a dependent variable with two possible value, which is represented by an indicator variable, where the two values are labeled "0" and "1".

Materials and methods

Training dataset

In this project, to tune up the object detection model for human detection under various low light conditions, a recently released Ex DARK dataset is considered which specifically focuses on a low-light environment. In this dataset, 12 different classes of objects are labeled, out of which we fetched data of our desired class for training. This dataset contains different indoor and outdoor low light images; further more, the data is subdivided for low light environment into 10 classes ambient, object, strong, twilight, low, weak, screen, window, shadow, and single. Sample images of various indoor-outdo or low-light environments from the dataset.

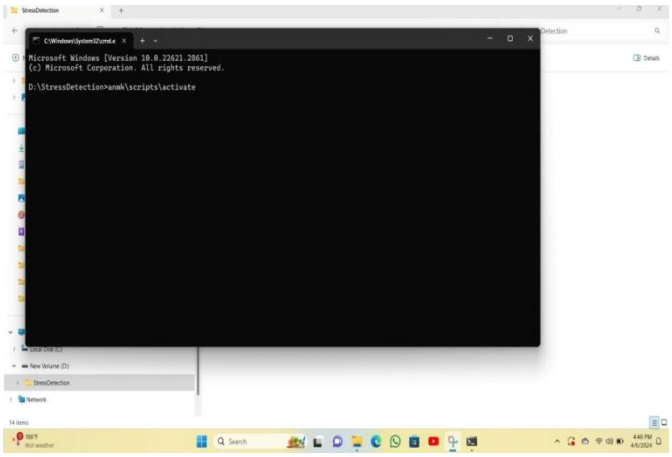
Testing dataset

A custom dataset is used for the evaluation of the proposed model. The dataset is collected from the market of Rawalpindi, Pakistan during the night in the days of COVID-19. Pakistan is one of the most urbanized countries in South Asia with a 3% yearly urban population growth rate. The large population and congested streets make it a riskier place in the growth of COVID-19 and it is very difficult to maintain safety distance in such narrow places. Hence, the monitoring system should need to have high accuracy in terms of the detection and location of the people. Evaluation of the proposed

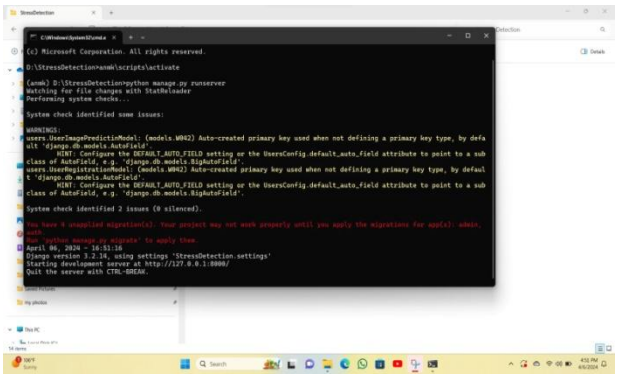
framework in such a highly-populated area will help us to better analyze the performance of the model. Test dataset is the collection of 346 RGB frames. Frames are collected with motionless To camera of Samsung galaxy note 10+ installed 4.5 feet above the ground where a 0° regular camera view calibration is adopted. Sample images of low-light conditions from the custom dataset.

V. Sample Screens

1. open wrampserver
2. start all services and open folder on particular drive and open cmd prompt.



SCREEN **4.1 OPEN CMD PROMPT**

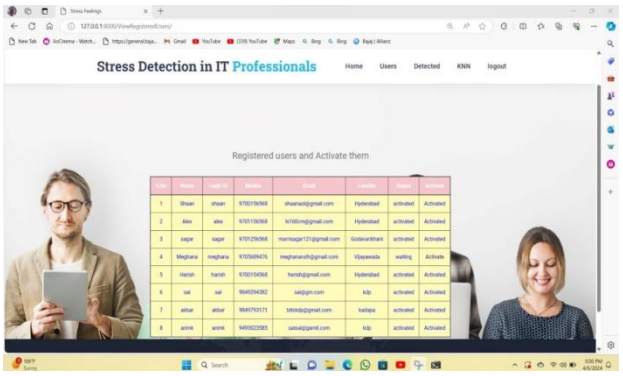


SCREEN 4.2 CMD PROMPT URL

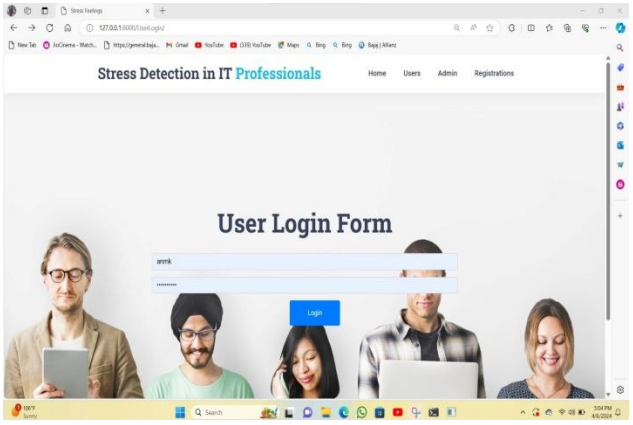
SCREEN 4.3 OPEN HOME PAGE

SCREEN 4.4 REGISTER FORM

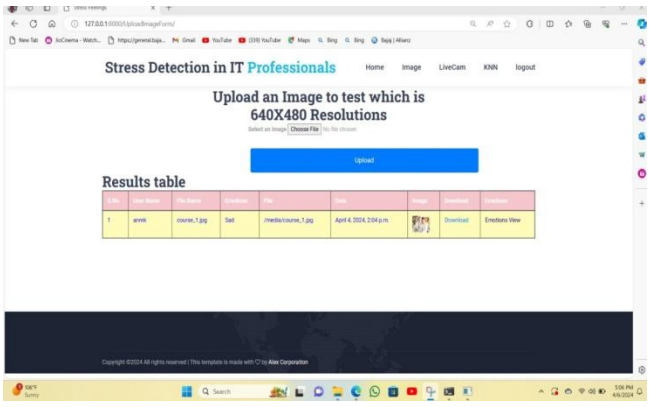
SCREEN 4.5 ADMIN LOGIN FORM



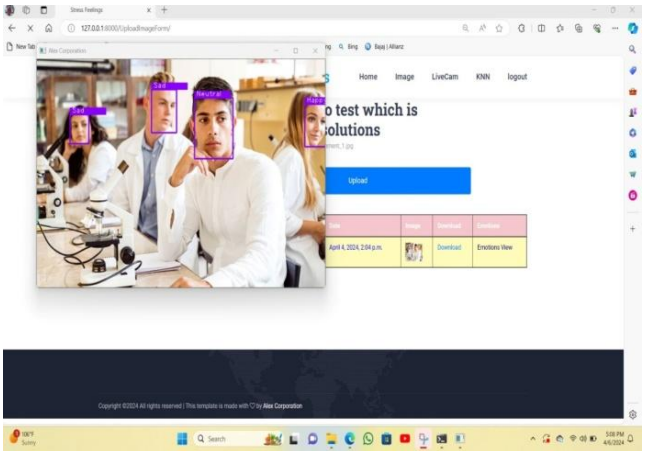
SCREEN 4.6 USER ACTIVATE FORM



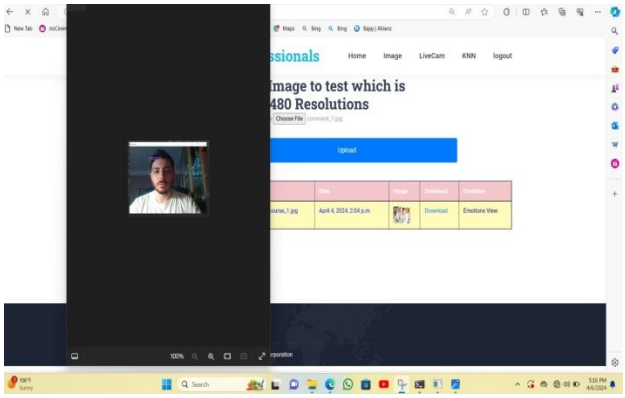
SCREEN 4.7 USER LOGIN FORM



SCREEN 4.8 UPLOAD IMAGE TO TEST



SCREEN 4.9 RESULT OF UPLOAD IMAGE



SCREEN 4.10 LIVECAM

VI. CONCLUSIONS

It is solid to build the Pressure Location Framework, which is meant to measure worker stress by evaluating images given by verified clients. Following successful registration and logging in, the user sends the image and also uses the live cam. Following the transmission of the image, we will obtain the outcome of the anxiety on the top point of the limited box as irate, wretched, blissful, nauseating, and nonpartisan. We support this model with KNN Model Engineering. We employ KNN Model Engineering to predict model precision.

Along with precision, we also anticipate, evaluate, f1, and disorder framework. We may supply appropriate cures for putting stress on executives, maintaining agents' working conditions sound and unrestricted, and abusing them overall. The suggested method for identifying force combines deep learning and image management. Highlights were taken from the images and studied. Future calculations for the video office might be advantageous in addition to the Live Cam. The yield processing approaches were applied to create the model and test it using the test dataset. The important added value of our investigation has been achieved by enabling the end customer to precisely experience progressive pressure to reduce future wellness risk variables, even when the results gained are preliminary due to the small number of participants or specialized data. For our future attempts, a broader population study will be required.

VII. REFERENCES

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