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Child Abusing Detection and Avoiding System Using Image Processing and ML

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ABSTRACT: In this project, we are highlighting major applications, challenges and trends of face recognition systems in social domains. The prime objective of this project is to sum-up recent face recognition techniques and develop a broad understanding of how these techniques behave on different datasets. Moreover, we discuss some key challenges such as variability in illumination, pose, aging, cosmetics, scale and background. We are performing the project on child abuse detection with help of moving and interacting robot. In liveable cities, parents goes out for a sake of job and their child is alone at home. By instance of Today's life methodology we ensure safety of child using robot technology. We are using the moving robot, in which robot having the rack and pinion gear for the movement of the camera, shaft and wheels for the giving direction to the robot. Moving robot detect the abnormal activity that is being carried out with child for this we have provided different facial expression input in form of the raw data to the system then, the data match with the system and detect the facial expression based on the raw data that we have provided. If the robot detect any abnormal activity based on its expression through our system then the robot start the buzzer to give alert.

KEYWORDS: Child Abuse Detection, Image Processing, Machine Learning

I. INTRODUCTION

As we know Child abusing ratio is increasing day by day and it will create problems in future if uncontrollable. We are trying to detect such problems and reducing the ratio with our methodology. In this Project, We are using moving robot, camera which is useful for movement. Basically we secure surrounding area of child, If any abnormal activities detected around the child. Child abuse detection and avoiding system is modern example of artificial intelligence which is used in many such cases and this is one of them. We are using moving interactive robot that detects captures child movement lively detected by Machine Learning Algorithm using CNN, A Convolutional Neural Network (CNN) is a type of deep learning algorithm for Image recognition and processing tasks. After we detect the face from input image, specific features of the face are identified. Finally, the expressions are classified using deep learning algorithms. Recognition tests are performed on basic expressions i.e. sadness, happiness, anger, surprise, fear, disgust and neutral. In comparison with shallower neural network the proposed deep neural network can provide better recognition performance. We expect the facial emotion recognition system give better result for monitoring movements and detect abnormal activities. On website we get live feed from camera and checks activity of child in backend and if any activity detected it give alert using buzzer or sending message.

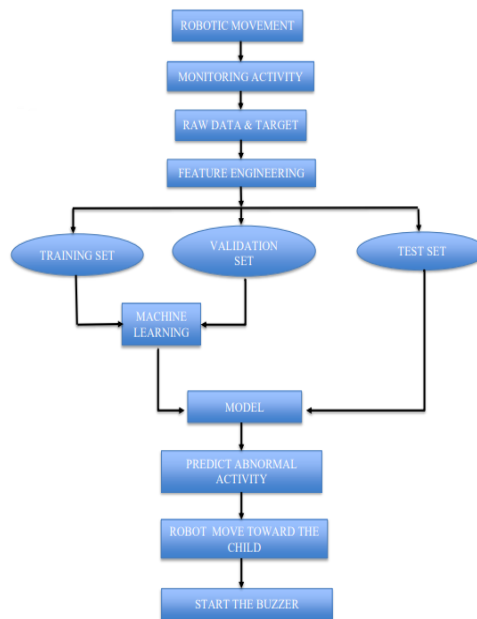
II. RELATED WORK

Intelligent sensors for mobile robots play an important role in many technical applications. The real-time image recognition system for a tiny soccer playing robot is presented, capable of detecting objects in real-time at a frame rate of up to 60 frames/s by Stefan Mahlke and Roland [1]. Convolutional neural networks (CNN) have been widely used to overcome the difficulties in facial expression classification and presented a new architecture network based on CNN for facial expressions recognition by Abir Fathallah [2]. In facial recognition, there are different steps such as preprocessing, feature extraction and classification where feature extraction and classification are used to obtain maximum accuracy. The different feature extraction techniques such as ASM, AAM, Gabor features, Template based, and several are critically reviewed by Vinodpuri Rampuri Gosavi [3]. In [4] by Wisal Hashim proposed an algorithm for video-based emotion recognition with no manual design of features using a DCNN. The model considered the visual



modality only and achieved an excellent recognition rate for the 10 used emotions. The authors in [5] by Priyanka K P, Divyaprabha emerging on topic for proximity service, safe, natural, and advanced human robot interaction (HRI) system is not only provide physical contact between robots and human beings, it also provides emotional interaction. It explains SVM (support vector machine) is used for face detection in facial expression recognition. For face recognition local binary pattern, compound local binary pattern, and dynamic LTP (local ternary pattern) are used.

III. METHODOLOGY

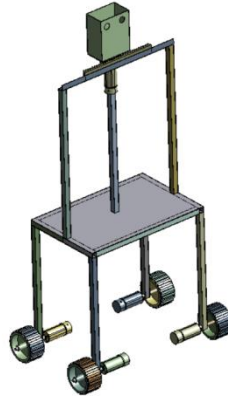


The robot is equipped with wheels to move around the given area and a camera mounted on a rack and pinion system to monitor the surroundings in 180 degrees. Raw data is provided and feature engineering is done to simplify and enhance the data for better accuracy in machine learning algorithms. The training set is used to fit the parameters of the machine learning model to generate a predictive model. The validation set is used to optimize the model and avoid overfitting. The test set is used to assess the performance of the final model. If abnormal activity is detected, the robot moves towards the subject and rings a buzzer to alert nearby people. By using this methodology, we can create an efficient system for detecting abnormal activity and alerting people in case of any danger.

IV. EXPERIMENTAL RESULTS

Fig. a shows the design of moving robot which uses camera for live feed that detects the abnormal activity using Machine learning algorithm and uses buzzer for alerting.

Fig.a Design of Child Abuse Detection Robot



In Fig. b we see a website which get live feed from camera and checks activity live using image processing and if any activity detects it gives alert using buzzer or sends the message.

Fig. b Website Landing Page



V. CONCLUSION

The detection algorithm is proposed to detect abnormal events in region or particular place which combined with space-time feature cubes and competitive neural network model. Experimental results obtained by using our test video sequences have shown that the proposed system's method is capable of detecting the abnormal child behaviour.

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