Reduction of Swapping of Babies Through Face Matching

S Shashank, Student, DSCE Bangalore & India, shashanksriram20@gmail.com

Dr. J Rajeshwari, Professor, DSCE Bangalore & India, rajeshwarij-ise@dayanandasagar.edu

Abstract: In the latest advancement in technologies provides a way to recognize a person using different desire one such is facial matching or image recognition on face. It is one of the main technologies used all over the world for different motives. Face matching of babies has provided a cause to safe their babies from exchange, mixing and kidnapping etc. and also plays a vital role in the medical science to overcome the problem facing till today. There is an increase in the case all over the universe and one way to get rid of this problem is through face matching. This paper provides a contrast on various face matching techniques used and also to differentiate the efficiency and accuracy being provided in the system.

Keywords -- Face Matching, Babies, Sequential covering method, CNN Algorithm.

I. INTRODUCTION

Exchange or transfer of babies in hospital has created a major issue in the medical science all over the world. In a year approximately 3,85,000 babies are born in India and about 28,000 babies get exchanged or kidnapped in the hospital every year. Various face matching algorithms are mainly useful for extracting facet, from babies image of face. To overcome this problem a solution for exchange and swap of babies is overridden from facial matching. In many hospitals they are trying to overcome the reduction by introducing new technology such as biometric, fingerprint or thumb impression but atlast resulted in less performance.

Several features such as face, eyes and finger mark are extensively provided in the research work and have incorporated in several sector like government organizations etc. Face matching approach is a trend in real time scenario by capturing the photos, videos, reels, snaps of babies which is mainly to recognize the identity of the baby. Clicking the photo of babies is very hard as it depends on change their facial expression and some babies cry due to spotlight in the camera.

Several authors have given explanation about face matching approach using different methods. By adequate information about mother face recognition and safe recollection I.W.R Bushnell et al. [1] proposed visual performance technique. The baby show in face insight analysis by face motive Michael C. Frank et al. [2] proposed face stimuli isolation method.

Babies eye and head trace of moving stimuli Masako Myowa-Yamakoshi et al. [3] proposed gibbon method for facial recognition. From geometric facial description by jointly utilizing the temporal facial features and its appearance Ruicong ZHI et al. [4] proposed dynamic hybrid description model. Automatic child recognition like vaccination tracking and civil ID program Lacey Best-Rowden et al. [5] proposed automatic facial recognition on young children. Face recognition on singular value decomposition helps in overcoming problems like swapping, abduction Dinesh Goyal et al. [6] proposed HMM and SVD coefficient.

Face matching is an important technique for recognizing the new born babies at initial stages to corresponding stage. Through face matching approach parents can get their own baby. By comparing the image of one baby with other babies. Security of babies can be kept track in face matching, and mother get their own baby. Through this modern implementation we can track the victims of modern-day slavery and loss of babies.

II. Literature Survey

Table 1: Comparison study of **"Reduction of swapping of babies through Face Matching"** on different Papers

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Sl. No	Authors	Description	Techniques	Advantages	Drawbacks
1.	Samarth Bhardwaj,.	Face Recognition for new borns: A preliminary study	Face Recognition procedure-based on SURF AND LBP methods.	Automatic face recognition of new born babies is achievable.	Size of database in large scale evaluation.
2.	Dinesh Goyal,.	An Enhanced Approach for face recognition of new been using HMM and SVD Coefficients.	HMM and SVD methods are used to reduce the block size of image using image processing.	2-D HMM will provide an improvement in efficiency and performance.	Application of complicated database in training and testing output.
3.	Lacey Best-Rowden,.	Automatic face recognition of new borns, infants and toddlers: A longitudinal Evaluation	Automatic facial recognition.	It is important to look over the young children and is flexible.	The risk gathering the data and is 100% reliable.
4.	Michael C. Frank,..	Development of infant's attention to faces during first year.	Face stimuli isolation method.	The early face of infants partially and growth.	It is most suitable for low level image data set.
5.	Masako Myowa Yama-khoshi,.	Development of Face Recognition in an Infant Gibbon.	Gibbon method.	By considering the sensitive feature of infant.	It is suitable for independent face recognition
6.	I.W.R Bushnell,.	Mothers Face Recognition in new born Infants.	Visual Performance.	Mother and infant Recognition.	The visual database is complex and ineffective.
7.	Sayana M S,..	A review on newborn face recognition using Convolution network.	Convolution Neural Network.	It provides High Accuracy.	Grouping of dataset image in different position.

III. Proposed System

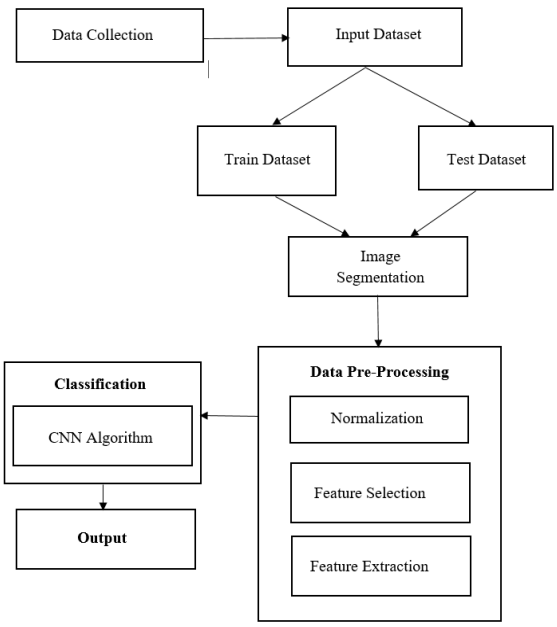

Fig. 1: System Architecture of our system

In Figure 1 illustrates the system architecture of our proposed system. In the first step of our model, is collecting the dataset of babies. The baby images are collected from parents and hospital, images of babies are separated in different file with a naming document. 25 images are classified and the input data is trained using CNN algorithm with processing layer namely convolution layer, convert the image into pixel and takes small part of image, ReLU layer (segmentation), it removes the unwanted noise or background in the image, Polling layer, it reduces size of the image, fully connected layer, classifies the image. Test data will compare with the obtained trained data model. In pre-processing step sequential covering algorithm approach is followed, the matrix size of the image is changed from RGB to gray scale to relieve initialization followed by reducing the noise from the image using median filtering, Basic Global thresholding change the pixel size of the image by appending zeros at edges and corner of the matrix and thus from enhanced matrix of threshold value is set to 150 and thus image is sharpened at edges by giving fine feature using high pass filter by increasing the quality of image. In Feature selection the sharpened image is selected, then feature extraction is carried out by histogram orientation gradient to extract the pre-processed image for object detection, Gx and Gy is calculated, later magnitude denotes illumination and degree denotes angle of orientation obtained. In CNN, output of high pass filter is taken as input and thus it acts as a classifier. By using convolution, rectification and pooling as three sub modules (C-Layer, pooling Layer, Fully connected Layer) giving a final comparison matrix. The output of the pooling layer is flattened and is classified using SoftMax activation function, used to classify the image of baby is swapped or not swapped.

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IV. Conclusion

This paper is based on "Reduction of swapping of babies through face matching". The proposed model helps to overcome whether baby is being swapped or not swapped in hospital using CNN approach. The quality of the image plays an important role in determining the accuracy, as it plays a vital role in face detection. The face matching methodologies for new born babies recognition can be implemented in various hospitals and nursing homes.

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