Deep Learning And Multiclass SVM For Missing Child Identification System

Mr.G.NAVEEEN[1] ,V.NIHARIKA[2],K.NITESH[3], Y.LALITH[4] , S.PRAVEEN[5]

#1 Assistant Professor in Department of CSE,in Raghu Engineering College ,Visakhapatnam.

#2#3#4#5 B.Tech with Specialization of Cyber Security in Computer Science and Engineering in Raghu Institute of Technology ,Visakhapatnam .

Abstract_ In India a infinite range of kids are pronounced lacking each and every year. Among the missing toddler instances a giant share of youth stay untraced. This paper gives a novel use of deep getting to know methodology for figuring out the stated lacking infant from the pics of multitude of young people available, with the assist of face recognition. The public can add pictures of suspicious baby into a frequent portal with landmarks and remarks. The image will be mechanically in contrast with the registered pix of the lacking infant from the repository. Classification of the enter baby photo is carried out and image with nice fit will be chosen from the database of lacking children. For this, a deep studying mannequin is educated to efficaciously pick out the lacking baby from the lacking infant photograph database provided, the use of the facial photo uploaded via the public. The Convolutional Neural Network (CNN), a exceptionally superb deep studying method for picture primarily based functions is adopted right here for face recognition. Face descriptors are extracted from the photographs the usage of a pre-trained CNN mannequin VGG-Face deep architecture. Compared with regular deep gaining knowledge of applications, our algorithm uses convolution community solely as a excessive stage function extractor and the infant cognizance is achieved with the aid of the skilled SVM classifier. Choosing the pleasant performing CNN mannequin for face recognition, VGG-Face and acceptable coaching of it consequences in a deep getting to know mannequin invariant to noise, illumination, contrast, occlusion, picture pose and age of the toddler and it outperforms formerly techniques in face cognizance primarily based lacking infant identification. The classification overall performance finished for infant identification gadget is 99.41%. It used to be evaluated on forty three Child instances.

1.INTRODUCTION:

Children are the best asset of every nation. The future of any us of a relies upon upon the proper upbringing of its children. India is the 2d populous us of a in the world and teens characterize a sizeable share of whole population. But lamentably a massive quantity of youngsters go lacking each and every yr in India due to a number of motives consisting of abduction or kidnapping, run-away children, trafficked young people and misplaced children. A deeply annoying reality about India's lacking youth is that whilst on an common 174 adolescents go lacking each and every day, half of of them continue to be untraced. Children who go lacking might also be exploited and abused for more than a few purposes. As per the National Crime Records Bureau (NCRB) document which used to be stated with the aid of the Ministry of Home Affairs (MHA) in the Parliament (LS Q no. 3928, 20-03- 2018), extra than one lakh teenagers (1,11,569 in authentic numbers) had been mentioned to have long gone lacking until 2016, and 55,625 of them remained untraced until the stop of the year. Many NGOs declare that estimates of lacking adolescents are a good deal greater than reported. Mostly lacking baby instances are suggested to the police. The toddler lacking from one vicinity might also be located in some

other area or some other state, for a range of reasons. So even if a Journal of Information and Computational Science toddler is found, it is tough to discover him/her from the mentioned lacking cases. A framework and methodology for creating an assistive device for tracing missing infant is described in this paper. An thought for preserving a digital area is proposed, such that the current pix of teenagers given with the aid of mother and father at the time of reporting lacking instances is saved in a repository. The public is given provision to voluntarily take images of young people in suspected conditions and uploaded in that portal. Automatic looking out of this photograph amongst the lacking baby case snap shots will be supplied in the application. This helps the police officers to come across the baby somewhere in India. When a toddler is found, the photo at that time is matched towards the pictures uploaded with the aid of the Police/guardian at the time of missing. Sometimes the baby has been lacking for a lengthy time. This age hole displays in the snap shots considering the fact that getting older impacts the form of the face and texture of the skin. The function discriminator invariant to growing older results has to be derived. This is the assignment in lacking infant identification in contrast to the different face consciousness systems.

Also facial look of toddler can range due to adjustments in pose, orientation, illumination, occlusions, noise in historical past etc. The photo taken by means of public may additionally now not be of correct quality, as some of them may additionally be captured from a distance except the information of the child. A deep getting to know [1] structure thinking about all these constrain is designed here. The proposed device is comparatively an easy, cheaper and dependable approach in contrast to different biometrics like finger print and iris focus systems.

2. LITERATURE SURVEY

[1] Y. LeCun, Y. Bengio, and G. Hinton, "Deep learning", Nature, 521(7553):436–444, 2015.

Deep gaining knowledge of approves computational fashions that are composed of more than one processing layers to examine representations of records with a couple of degrees of abstraction. These techniques have dramatically extended the latest in speech recognition, visible object recognition, object detection and many different domains such as drug discovery and genomics. Deep getting to know discovers complex shape in massive facts units by using the use of the backpropagation algorithm to point out

how a computer ought to alternate its inner parameters that are used to compute the illustration in every layer from the illustration in the preceding layer. Deep convolutional nets have added about breakthroughs in processing images, video, speech and audio, whereas recurrent nets have shone mild on sequential facts such as textual content and speech.

[2] O. Deniz, G. Bueno, J. Salido, and F. D. la Torre, "Face consciousness the usage of histograms of oriented gradients", Pattern Recognition Letters, 32(12):1598–1603, 2011.

Still-to-video face cognizance (FR) performs an necessary position in video surveillance, permitting to apprehend men and women of hobby over a community of video cameras. Watch-list screening is a difficult video surveillance application, because faces captured for the duration of enrollment (with nonetheless camera) may also vary extensively from these captured at some point of operations (with surveillance cameras) below uncontrolled seize prerequisites (with editions in, e.g., pose, scale, illumination, occlusion, and blur). Moreover, the facial fashions used for matching are generally designed a priori with a constrained wide variety of reference stills. In this paper, a multi-

classifier machine is proposed that exploits domain adaptation and a couple of representations of face captures. An individual-specific ensemble of exemplar-SVM (e-SVM) classifiers is designed to mannequin the single reference nevertheless of every goal individual, the place specific random subspaces, patches, and face descriptors are employed to generate a numerous pool of classifiers. To enhance robustness of face models, e-SVMs are educated the use of the constrained variety of labeled faces in reference stills from the enrollment domain, and an abundance of unlabeled faces in calibration movies from the operational domain. Given the availability of a single reference goal still, a specialised distance-based standards is proposed primarily based on houses of e-SVMs for dynamic decision of the most capable classifiers per probe face. The proposed strategy has been in contrast to reference structures for still-to-video FR on movies from the COX-S2V dataset. Results point out that ensemble of e-SVMs designed the usage of calibration movies for area adaptation and dynamic ensemble decision yields a excessive degree of FR accuracy and computational efficiency.

[3] C. Geng and X. Jiang, "Face focus the use of sift features", IEEE International Conference on Image Processing(ICIP), 2009.

Scale Invariant Feature Transform (SIFT) has proven to be a effective method for ordinary object recognition/detection. In this paper, we endorse two new approaches: Volume-SIFT (VSIFT) and Partial-Descriptor-SIFT (PDSIFT) for face consciousness primarily based on the authentic SIFT algorithm. We evaluate holistic approaches: Fisherface (FLDA), the null area strategy (NLDA) and Eigenfeature Regularization and Extraction (ERE) with characteristic primarily based approaches: SIFT and PDSIFT. Experiments on the ORL and AR databases exhibit that the overall performance of PDSIFT is appreciably higher than the authentic SIFT approach. Moreover, PDSIFT can gain same overall performance as the most profitable holistic strategy ERE and substantially outperforms FLDA and NLDA.

3.PROPOSED SYSTEM

Here we propose a methodology for missing child identification which combines facial feature extraction based on deep learning and matching based on support vector machine. The proposed

system utilizes face recognition for missing child identification.

The proposed system is comparatively an easy, inexpensive and reliable method compared to other biometrics like finger print and iris recognition systems. features extracted using a CNN network for getting facial representations gives better performance in face recognition than handcrafted features This is to help authorities and parents in missing child investigation

In this paper author is describing concept to identify missing children by using Deep Learning and Multiclass SVM classifier and to implement this project author has used below modules

3)

1)   Using public dataset of missing children's called FGNET is used to train deep learning CNN prediction model. After training model whenever public upload any suspected child image then this model will check in trained model to detect whether this child is in missing database or not. This detected result will store in database and whenever want official persons will login and see that detection result.

2)   SVM Multiclass classifier use to extract face features from images based on age and other facial features and then this detected face will input to CNN model to predict whether this face child exists in image database or not.
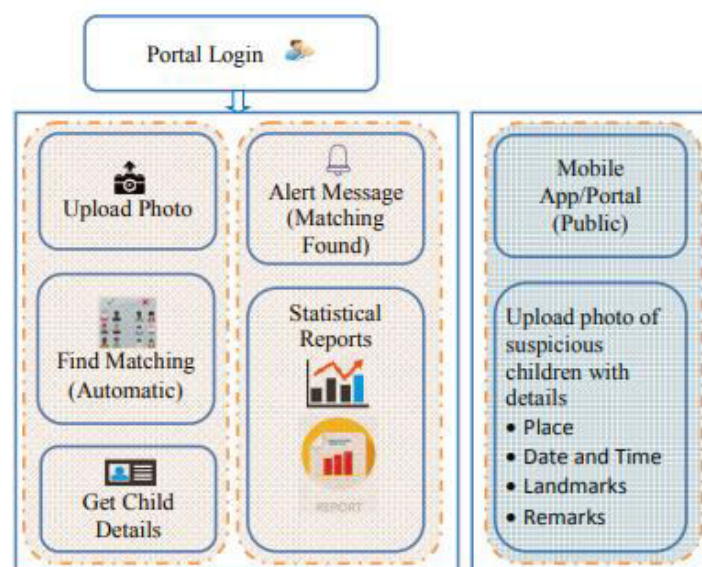
Fig. 1.   Architecture of proposed child identification system

4.RESULTS AND DISCUSSIONS

In above screen public can click on 'Public Upload Suspected Child' link to get below page and to add missing child details

In above screen public will enter suspected child details and then upload photo and then click on 'Submit' button and to get below result
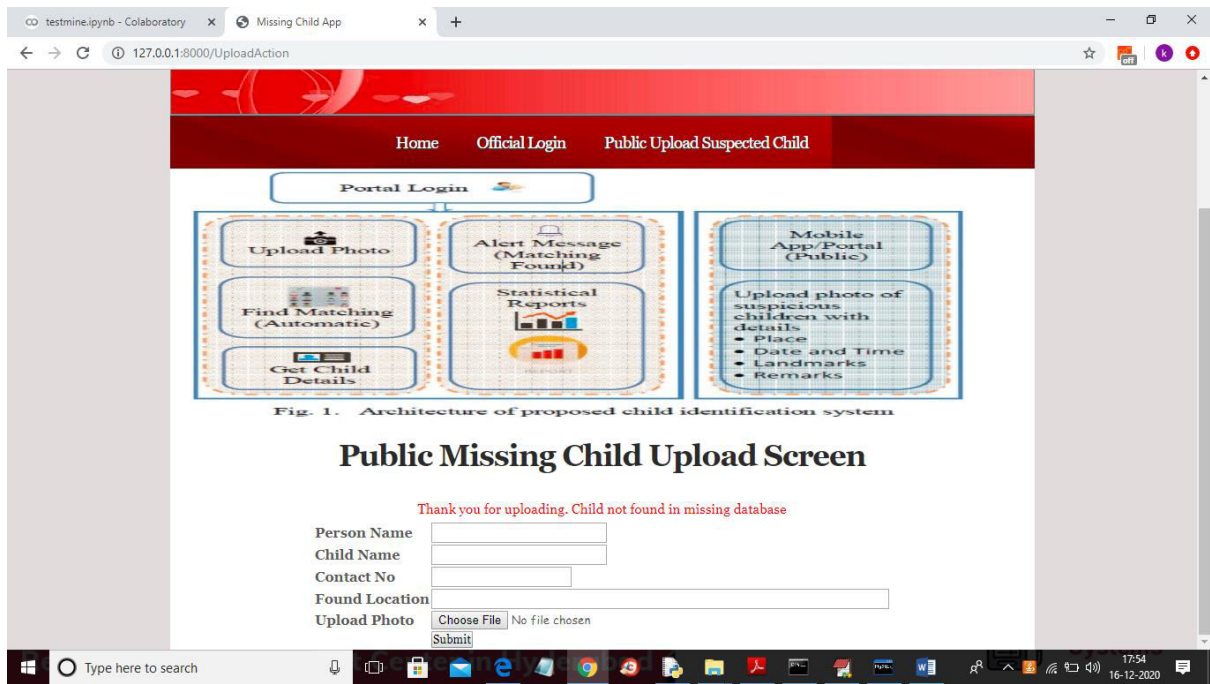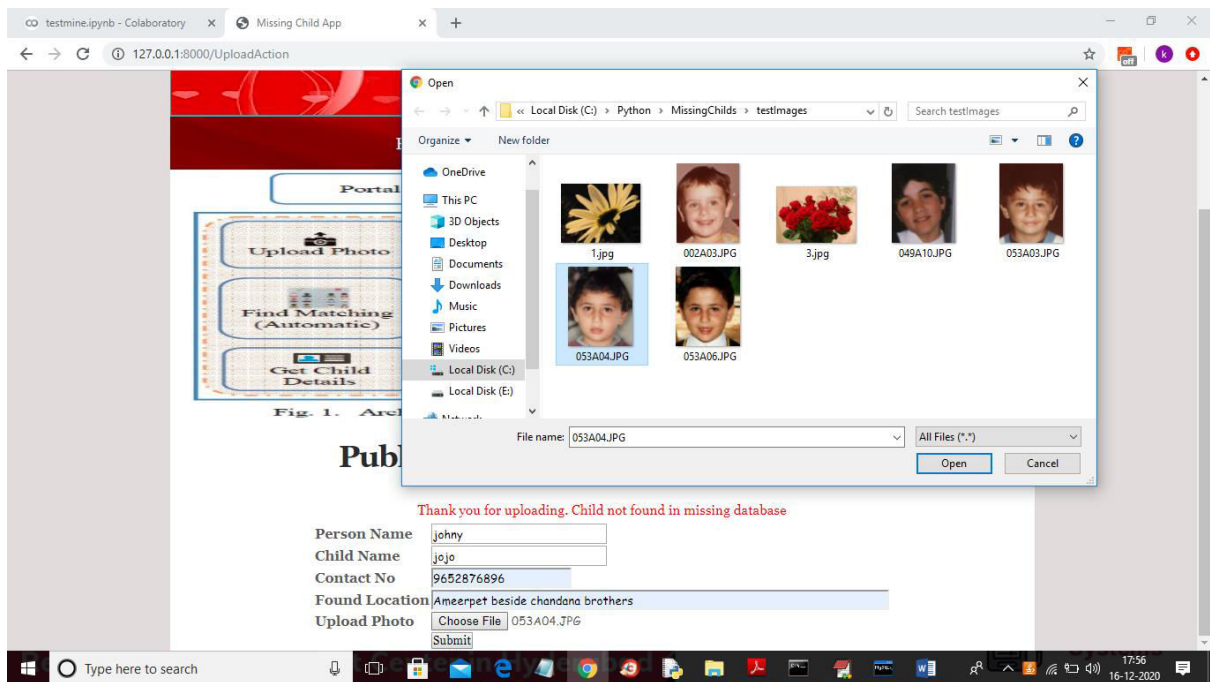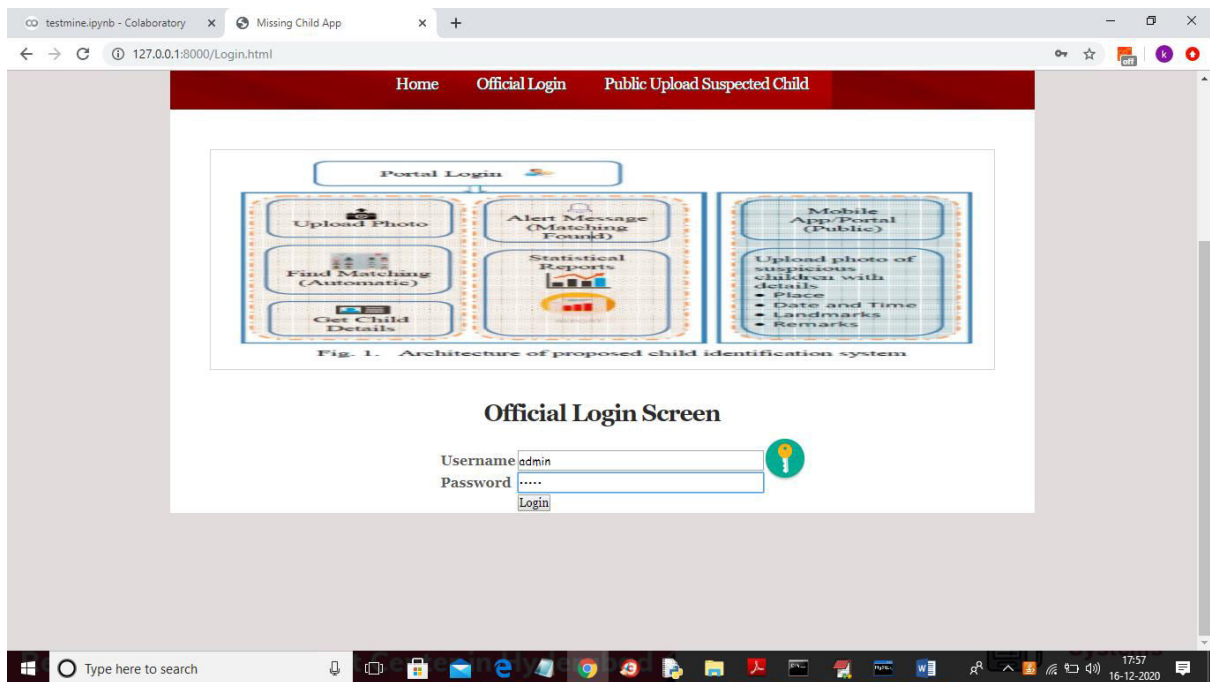
In above screen we can see child not found in missing DB and we can try with other image

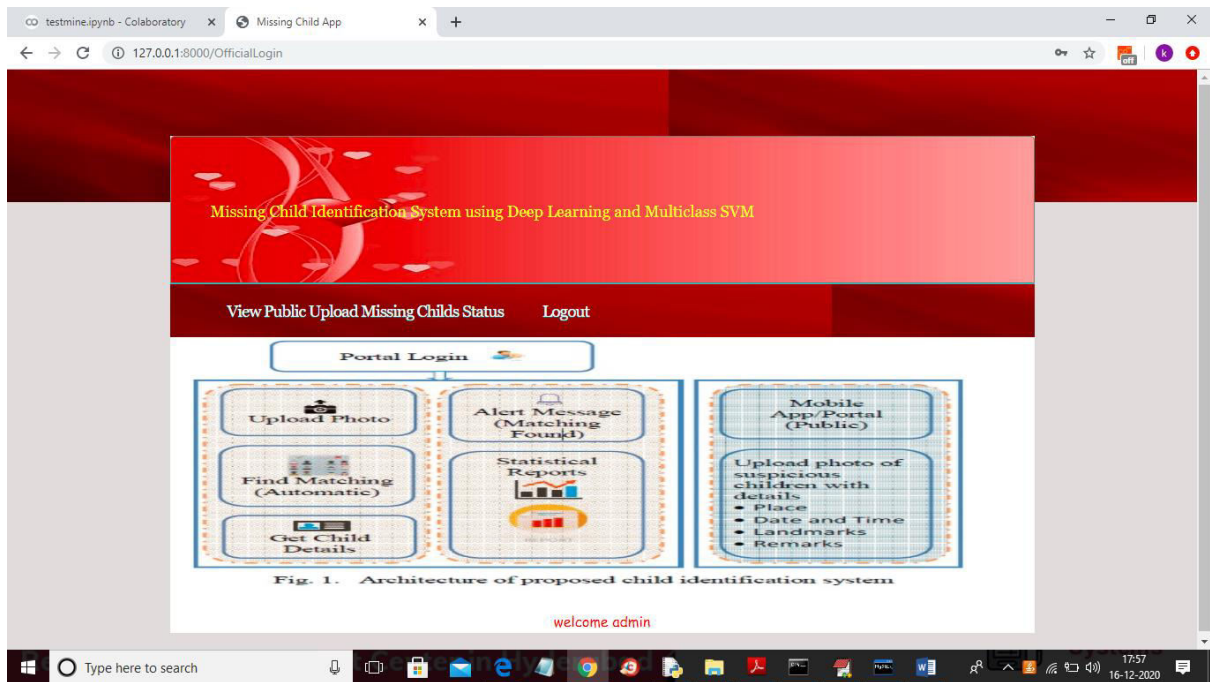And below is the result for new above child details
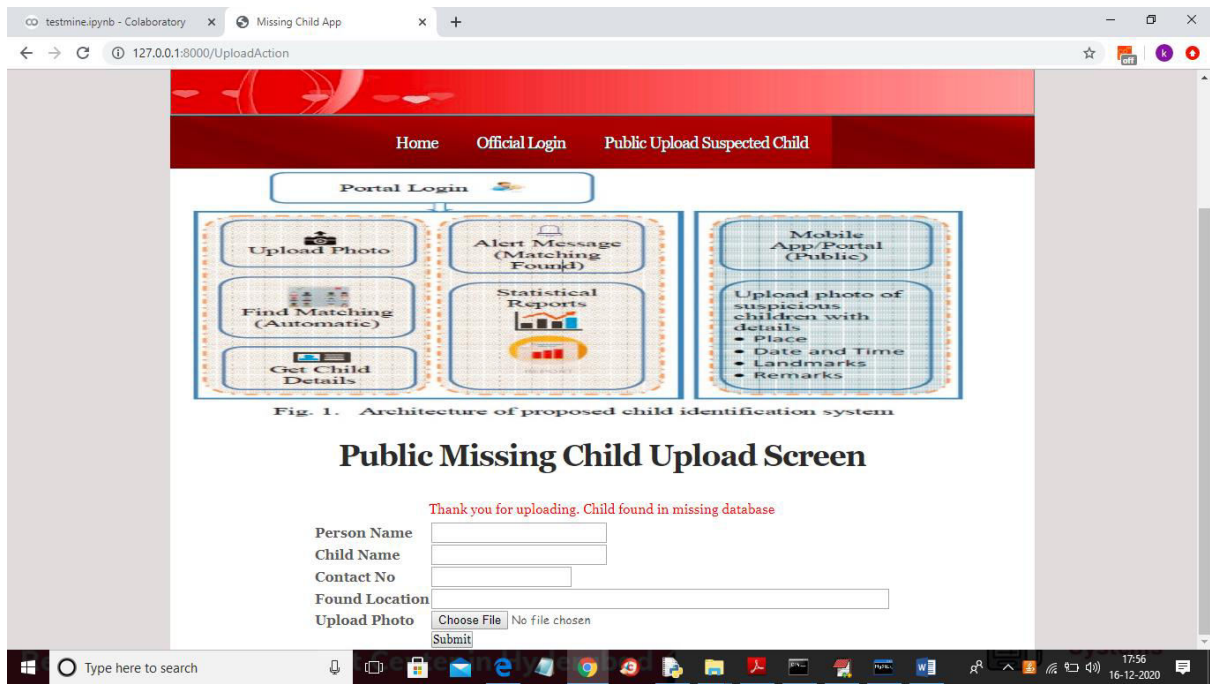
In above screen uploaded child found in database and now click on 'Official Login' link to get below login screen
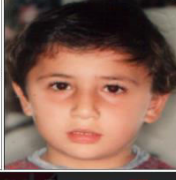

In above screen admin can login by entering username and password as 'admin' and 'admin' and after clicking on 'Login' button will get below screen

In above screen official can click on 'View Public Upload Missing Childs Status' link to view all uploads and its result done by public

In above screen officials can see all details and then take action to find that child

4.CONCLUSION

A missing child identification system is proposed, which combines the powerful CNN based deep learning approach for feature extraction and support vector machine classifier for classification of

different child categories. This system is evaluated with the deep learning model which is trained with feature representations of children faces. By discarding thesoftmax of the VGG-Face model and extracting CNN image features to train a multi class SVM, it was possible to achieve superior performance. Performance of the proposed system is tested using the photographs of children with different lighting conditions, noises and also images at different ages of children. The classification achieved a higher accuracy of 99.41% which shows that the proposed methodology of face recognition could be used for reliable missing children identification.

FUTURE SCOPE

In future we will use some more efficient algorithms to improve accuracy and efficiency for my application

REFERENCES

[1] Y. LeCun, Y. Bengio, and G. Hinton, "Deep learning", Nature, 521(7553):436–444, 2015.

[2] O. Deniz, G. Bueno, J. Salido, and F. D. la Torre, "Face recognition using histograms of oriented gradients", Pattern Recognition Letters, 32(12):1598–1603, 2011.

[3] C. Geng and X. Jiang, "Face recognition using sift features", IEEE International Conference on Image Processing(ICIP), 2009.

[4] RohitSatle, VishnuprasadPoojary, John Abraham, ShilpaWakode, "Missing child identification using face recognition system", International Journal of Advanced Engineering and Innovative Technology (IJAEIT), Volume 3 Issue 1 July - August 2016.
[5]

https://en.wikipedia.org/wiki/FindFace

[6] https://www.reuters.com/article/us-china-trafficking-apps/mobileapp-helps-china-recover-hundreds-of-missing-childrenidUSKBN15J0GU

[7] Simonyan, Karen and Andrew Zisserman, "Very deep convolutional networks for large-scale image recognition", International Conference on Learning Representations (ICLR), April 2015.

[8] O. M. Parkhi, A. Vedaldi, and A. Zisserman, "Deep Face Recognition," in British Machine Vision Conference, vol. 1, no. 3, pp. 1-12, 2015.

[9] A. Vedaldi, and K. Lenc, "MatConvNet: Convolutional Neural Networks for MATLAB", ACM

International Conference on Multimedia, Brisbane, October 2015. 2018 IEEE Recent Advances in Intelligent Computational Systems (RAICS) | December 06 - 08, 2018

[10]   D.N.V.S.L.S Indira, R.Abinaya, Suresh Babu and Ramesh.Vatambeti (2021), Secured Personal Health Records using Pattern Based Verification and 2-Way Polynomial Protocol in Cloud Infrastructure, Int. J. of Ad Hoc and Ubiquitous Computing .

[11]   Abinaya, R., Lakshmana Phaneendra Maguluri, S. Narayana, and Maganti Syamala. (2020), A Novel Biometric Approach For Facial Image Recognition using Deep Learning Techniques., International Journal of Advanced Research in Engineering and Technology, 11, no. 9.

[12]   Abinaya, R. (2021). Acoustic based Scene Event Identification Using Deep Learning CNN. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(5), 1398-1405.

[13]   Abinaya, R., & Sowmiya, R. (2021). Soft biometric based keystroke classification using PSO optimized neural network. Materials Today: Proceedings.

[14]   Dr. Abinaya. R; Aditya. Y; Dr. Bala Brahmeswara Kadaru. (2020), Automated classification of Oral Squamous cell carcinoma stages detection using Deep Learning Techniques, European Journal of Molecular & Clinical Medicine, 7, 4, 1111-1119.

Author's Profiles

Mr. G.NAVEEN[1] working as Assistant Professor in Department of CSE, Raghu Engineering College, Visakhapatnam.

V.NIHARIKA B.Tech with Specialization of Cyber Security in Computer Science and Engineering in Raghu Institute of Technology ,Visakhapatnam.

K.NITESH B.Tech with Specialization of Cyber Security in Computer Science and Engineering in Raghu Institute of Technology,Visakhapatnam.

.

Y.LALITH B.Tech with Specialization of Cyber Security in Computer Science and Engineering in Raghu Institute of Technology,Visakhapatnam.

S.PRAVEEN B.Tech with Specialization of Cyber Security in Computer Science and Engineering in Raghu Institute of Technology , Visakhapatnam.