In this review there will be a paragraph for each selected research paper and they will in order as in the references

In this research the main focus is about the history of face recognition technology . , it’s a biometric technology which is used for identifying people separately using facial features . in the beginning face geometry was the main focus . PCA and LDA was introduced between 1960s and 1990s. classifeirs like SVM,Adaboost , neural networks were invented during 1990s and 2010s .Deep learning technology has been in the action since 2010 .though these new technologies made huge difference to industry there were some challenges like pose , 3d modelling , expression changing .another thing was manual vs learned features .key technologies were PCA,LDA for facial feature extraction.SVM ,adaboost were the classifiers for face verification . when it comes evaluations benchmark datasets like LFW,CAS-PEAL-R1, megaface .accuaracy, rov curve auc measure discrimination ability were the matrices . through out this research paper it shows the development and the variation of the face recognition through out the years

when it comes to facial bio metrics it can be divided into two main parts face recognition and face detection .there are different types of developments, researches about these two methods . accuracies of different face recognition and detection techques were discussed in this research . Goofle and amazon are the leading companies which are researching for face recognition and detection. Datasets are the key thing to face recognition . in 2001 object detection using HAAR feature using cascade classifer was proposed. Its machine learning model which uses negative and positive images. Another important library is MTCNN which was written by github and ipacz. There are two methods for face detection in face recognition package hogg method and cnn method. There are perks and conns in these two while cnn method is more accurate but it take higher computational power . while hogg method is less accurate but its quick. Local Binary pattern (LBPH) also simple yet accurate method for facial recognition

in this research it shows accuracy about facial recognition techniques and introduction of a new dataset . the best face recognition models show a great accuracy of more than 99.8% on labeled faces in wild (LFW) dataset. To get such an accuracy these models were trained using large dataset which consists of millions of faces. In this research it discuss about a new dataset which has a it own rendering pipeline .this dataset has reduced the error rate by 52%. 256 per pixel were used to render these pictures. This syncface dataset has achieved 91.93 of accuracy and when it was tested with after mixing up with 2000 real pictures accuracy was 97.23%. with this new dataset synthetic to real domain gap has been clearly reduced error rate on LFW by 52.5% . it shows that this new data set is way better than GAN generated face to learn face recognition

This research is about a new open source framework called FaceX-Zoo .it provides various supervisory heads . also highly modular and scalable design is another feature in this framework. Another key feature is that a face sdk is provide with trained models for fully functional face validations this face sdk provides validation for masks faces to and allows to train face recognition networks with different backbones and supervisory heads. When it comes non masked face recognition face detection model was trained by retinal face on widerface dataset. This framework provides the solution for masked face recognition and semisiamese training for shallow face learning for the evaluation developers have synthesized a masked facial dataset based on MEGAFACE . for that FMA3D was used . also another important which has been implemented in this is they have given users a option of masked face recognition using 3D virtual mask adding technique using this feature they can train the module .from this new sdk , this can be used as the baseline for new developments .

Getting the statics about face recognition systems which was tested using small and large datasets. The mean absolute criterion was names as faster and simpler for face recognition . using a large dataset leads to low error rates. The research was done using ORL database with specific conditions. DET curve is used to evaluate the performance of the system. Classifier is a template matching method with a nearest neighbor . for large datasets Pin less mode is not accurate as its false matching rate is high . when using large datasets the results are more trustworthy as the error rates are low. The minimum size of the test dataset is N and estimating the N risk of α being wrong and error rate p does not exceed the estimated from the test set . there are two methods that a biometric system can operate those are identification and verification .AS the end conclusion of this study it shows that the MAD criterion Is faster and simpler for working.

The next research study is about a new face recognition technology GoogLeNet-M . as this is on the basis of streamlining the network. This improves the performance. Experiments shows that GooGleNet-M has the best performance with a recall rate of 0.97 and 0.98 of an accuracy. Also its concluded that out of other networks on the dataset googlenet-M has the best performance. In this the inception V2 layer has the batch normalization layer while the inception -V3 layer replaces the convolution kernel of two dimensions while the inception layer-4 comes with the idea of residual network . for this googlenet inception-v4 network has been used . googlenet using the channel shuffle is the improvement idea of this study. Here the nonlinearity of he network is increased as that leads to a meaningful depth of the network. Due to previous version’s activation function’s shortcomings those were improved continuously. This new technology has addressed the issue of high training accuracy and low test accuracy . with the adjustments to deep learning parameters learning rate will be high

In this research its about a research about synthetic data set and its experiments .with the controllable synthesis model without risking any privacy issues , non existing identities are taken for the datasets . the main focus of this study is observing the performance gap between the real images and synthetic image trained models there are two ways of narrowing the process effectively by enlarging the intra class variations and leveraging few real human faces for adaption of domain. The process can be briefly mentioned like this first the 10k identities were generated after the testing is finished there’s a gap of 88.98% vs 99.18% when the test is done on LFW and also syncface has more accuracy than the realface .these stats clearly depicts a considerable gap between synface and realface

When It comes facial recognition the according to the faces and identities MefaFace2 is the first and MS!M takes the second place large companies also use private datasets like Facenet by google, and the Facebook also trains their own models using 500M faces of 10M identities. With considerably large set of data training framework can be developed efficiently optimized. Also can be performed at a linear acceleration without dropping the performance. When it comes to earlier research studies three benchmarking tasks which are standard, masked, unbiased facial recognition are detailed including background, test sets and metrices those are compared with popular benchmarks and overlaps were removed .what’s difference in this is when it comes to masked face recognition performance of the algorithms are evaluated under three categories. For the metrices skewed error ration and standard deviation have been adopted. According to SER and STD scores training data reduces the biasness of recognition to a certain extent which surpasses the Webface4M and MS1MV2 .

In this study the main focus is about the lightning , facial expressions. With these parameters its bit hard for the trained models to make the recognition. When the quality of the image is low recognition become hardly possible depending on the degree. The experiment in this study is to prioritizing the hard samples for high quality images and easy sameples for low quality images. From this the loss function will be changed adoptively. First the images are introduced to data collection processes, from the difference in recognizability the problem is tackled using a feature norm as proxy for the image quality margin function is changed adoptively based on the feature gradient scale is assigned . then the efficiency of the proposed adaptive loss on various qualities of dataset and achieve low quality face datasets.