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CRIMINAL RECOGNIZATION IN CCTV SURVEILLANCE VIDEO

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Abstract—*Robust Criminal recognition in CCTV surveillance videos is a challenging but important issue due to the needs of practical applications such as security monitoring. While current face recognition systems perform well in relatively constrained scenes, they tend to suffer from variations in pose, illumination or facial expression in real-world surveillance videos. When the footages recorded by the CCTV camera's this application will monitor for the faces of the criminal which already uploaded by the user. Once the face has been recognized, The CCTV camera will follow the identified person on the video and track him/her through all the camera's by alerting other camera's also.*

Key words: Image processing, Face recognition, FOLPP, High definition Camera.

1. Introduction

In past decades computer vision and pattern recognition are played major roles in face recognition. There are some major challenges in face detection, which are not robust in different face poses illuminations occlusions, noise, facial expressions aging and resolution variations. Over the past few decades, the researchers attracted tremendously by dimensionality reduction. As a result there was new algorithms were developed.

1.1 Human Interaction:

Human interaction is one of the most important characteristics of group social dynamics in meetings. Meetings are an important communication and coordination activity of teams: status is discussed, decisions are made, alternatives are considered, details are explained, information is presented, and ideas are generated. We are developing a smart meeting system for capturing human interactions and recognizing their types, such as proposing an idea, giving comments, expressing a positive opinion, and requesting information. To further understand and interpret human interactions in meetings, we need to discover higher level semantic knowledge about them, such as which interactions often occur in a discussion, what interaction flow a discussion usually follows, and what relationships exist among interactions. This knowledge likely describes important patterns of interaction. We also can regard it as a grammar of meeting discussion.

1.2 Data Analytics over Hidden Databases:

Data analytics over hidden databases is an active research direction; typically, these hidden databases are part of the deep Web that can be accessed only by a form-like query interface. Along this research direction, various tasks are considered, such as, crawl the hidden Web, obtain a random tuple from a hidden database, retrieve top-k records by sampling, and estimate the size and other aggregates over a hidden database. These works are related to our work in the sense that we consider frequent pattern mining, also over the hidden databases. However, we do not assume a form-like interface to access the database, rather we assume that the data owner provides a random sample to interact with the database and the sampler is guided by the data analyst through interactive feedbacks

1.3 Interactive Pattern Mining

Surprisingly, existing works on interactive pattern mining (IPM) are sparse .One of the main techniques that the existing works follow is constraint-based mining, where a user can add additional constraints as an interactive input. The mining system considers these constraints to filter the output set to tailor it according to the user's requirements. Setting constraints is effective for some mining problems, but for many others, applying hard constraints may yield sub-optimal results. Also, designing constraints to guide mining is not easy, particularly while mining from hidden dataset; an analyst first needs to explore some example patterns before she can think about the constraints that would work best for her specific applications.

1.4 Frequent Pattern Sampling

For mining frequent patterns from a hidden dataset, we use anMarkov Chain Monte Carlo(MCMC) based random walk on the frequent pattern space. In recent years, various other works also follow a similar approach. Proposed a mining framework, that they called output space sampling, which can sample frequent patterns using a user-defined distribution. The sampling framework that we devise in this work is similar to the work; however, the sampling distribution remains static throughout the mining session, whereas in our work, the sampling distribution keeps changing in response to the user's feedback. Also, the random walk is performed over the edge of the Partial Order Graph (POG); our work deviates from this by performing random walk over a state-transition graphin which a random graph is overlaid on top of the POGgraph—the above modification improves the convergence of an MCMC walk significantly.

1.5 Detection and Tracking of Facial Features

The detection and tracking of facial features in video sequences is an important step of our approach, since it provides the normalized facial feature images, which are required by both the training and classification procedures. The topics concerned to this section can be divided in three parts: detection of faces, facial features and normalization of facial features. It is important to say that the user is supposed to move his head naturally while the camera acquires the image sequence, with non-controlled illumination conditions

2. literature survey

Su-Jing Wang, Shauicheng Yan, Jian Yang, Chun-Guang Zhou, Xiaolan Fu Proposed a system named "A general exponential framework dimensionality reduction" in 2014 [11]. This system uses the technologies like Locality Preserving Projection, Unsupervised Discriminate Projection, Marginal Fisher Analysis. The main advantages easily identify the local dimensions. Also the disadvantages is The algorithmic performance is sensitive to the size of neighbors.

Min Xu, Hao Chen, Pramod K. Varshney Proposed a system named as "Dimensionality Reduction for Registration of High-Dimensional data sets" in 2013 [12]. Here they uses the technology called Dimensionality Reduction Algorithms. The advantage is Minimize the locality dimensions and maximizes the globality dimensions.

Yanhua Yang, Cheng Deng, ShangqianGao, Dapeng Tao, XinboGao Proposed a system named as "Descriminative Multi-Instance Multi-Task Learning for 3D action recognition" in 2009 [13]. Technologies used Multi-Instance Multi-Task Learning for 3D action recognition Algorithms (MIMTL). The advantage is It will work better for sometypes of crime rather than others.

Tianyi Zhou, Dacheng Tao Proposed a system named as "Double Shrinking Sparse dimensions reduction" in 2013 [14].

The technology used is Double Shrinking Algorithms (DSA). The advantage is The experimental results suggest that double shrinking produces efficient and effective data compression.

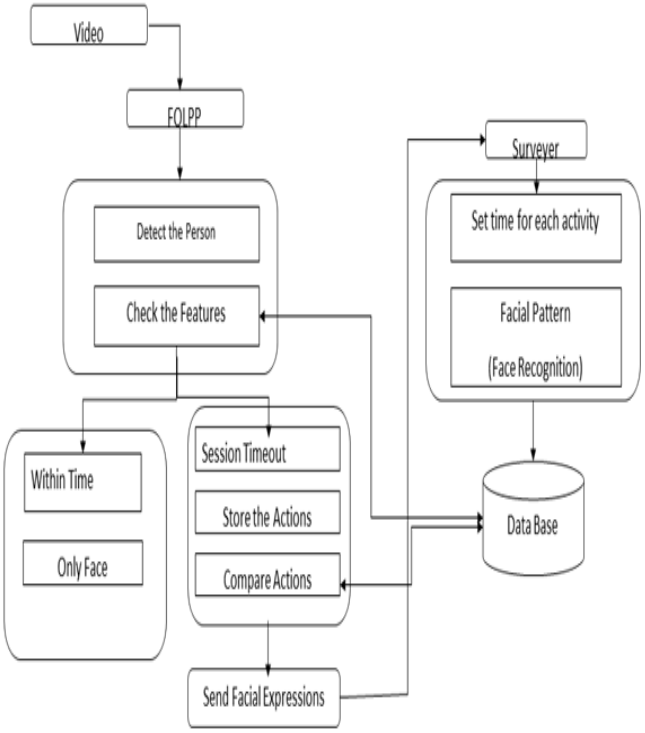
Yanhua Yang, Cheng Deng Proposed a system named as "Latent Max-Margin Multitask Learning WithSkeletons for 3-D Action Recognition" [15]. The technology used is Latent MaxMargin Multitask learning (LM3TL) algorithm. The advantage is It recognize the 3-D model of the human Action. The disadvantage is Not recognize Different body Gesture by the human skeleton.

3. System analysis

3.1 Proposed System:

It proposes a method for criminal recognition in CCTV surveillance videos by deep learning. This application have to be install in the computers of control rooms. When the footages recorded by the CCTV camera's this application will monitor for the faces of the criminal which already uploaded by the user. Once the face has been recognized, The CCTV camera will follow the identified person on the video and track him/her through the entire camera's by alerting other camera's also. This will result in the identification of the criminal all over the districts.

Architecture diagram:



4. SYSTEM IMPLEMENTATION

Module List:

1. Video Image Segmentation
2. Image Acquisition
3. Human action recognition
4. Flow Construction

Module Description

4.1 Video Image Segmentation: In this module performs to achieve image tracking in video file to find out the correspond pairs of adjacent frames. An image will make the pixels in each frame in a color that is very similar the circle will be created by hitting the frame around the face. The first

contribution is a new a technique for computing a rich set of image features using the integral image. The second is a learning algorithm, based on OFLPP, which selects a small number of critical visual features and yields extremely efficient classifiers.

4.2 Image Acquisition: The first stage of any vision system is the image acquisition stage. Acquiring images directly from a camera or from a video source. After the image has been obtained, various methods of processing can be applied to the image to perform the many different vision tasks required today.

4.3 Human Face recognition (HFR): HFR related to global and local feature extraction models with their merits and demerits. Global approaches based on the silhouette images or contour of the body which gives the shape information, while the local representation works on the small patches which is used in object recognition. ROI also helps in making these images invariant to scale and translational variations and further divided into sublevels, and for each level, we compute the orientation of the edges at finer scale. It reduces the computational time and complexity of the system.

4.5 Flow Construction: Spontaneous interactions are those that are initiated by a person spontaneously, and reactive interactions are triggered in response to another interaction. For instance, propose and ask Opinion are usually spontaneous interactions, while acknowledgement is always a reactive interaction. Whether an interaction is spontaneous or reactive is not determined by its type (e.g., propose, ask Opinion, or acknowledgement), but labeled by the annotator manually.

5. EXPERIMENTAL RESULTS

A set of experiments carried out on criminal recognition in cctv surveillance video. The performance evaluation of the system is performing using this dataset. The screenshots of various phases of faces analysis system are as follows:

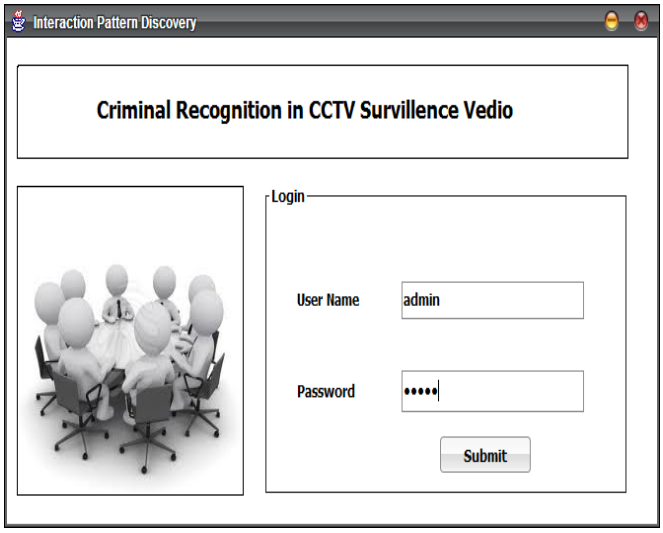


Figure 1 represents admin page.

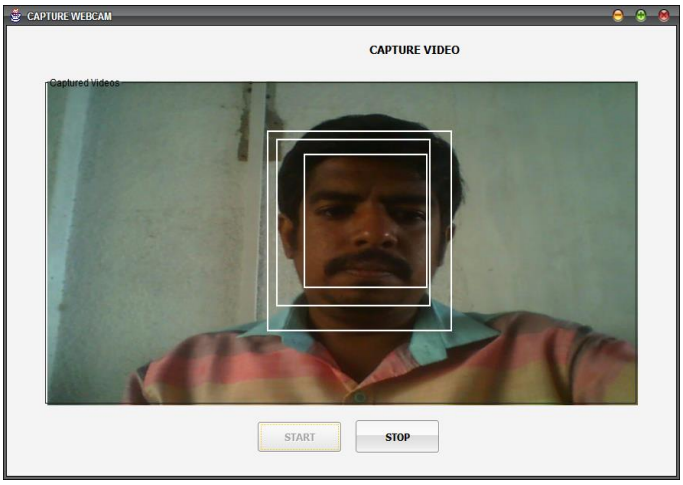


Figure 2 represents the Live Recording Footage video

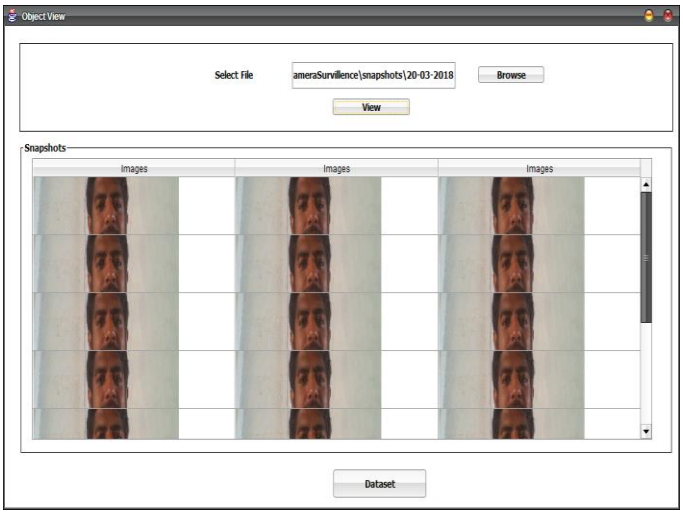


Figure 3 represents the Snapshots of faces.

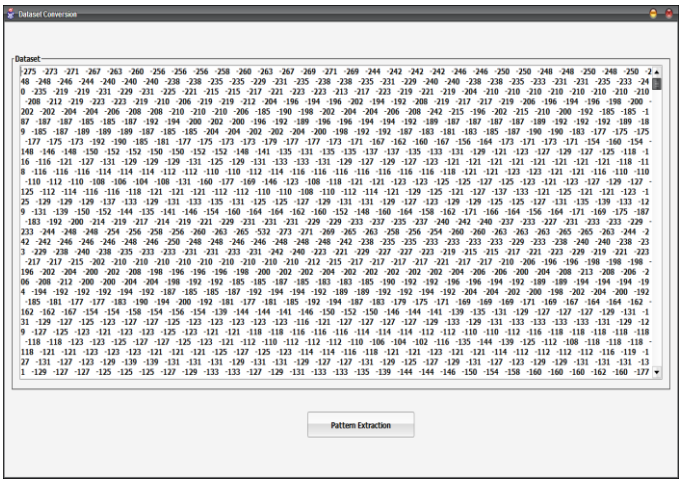


Figure 4 represents the pattern extraction of images.

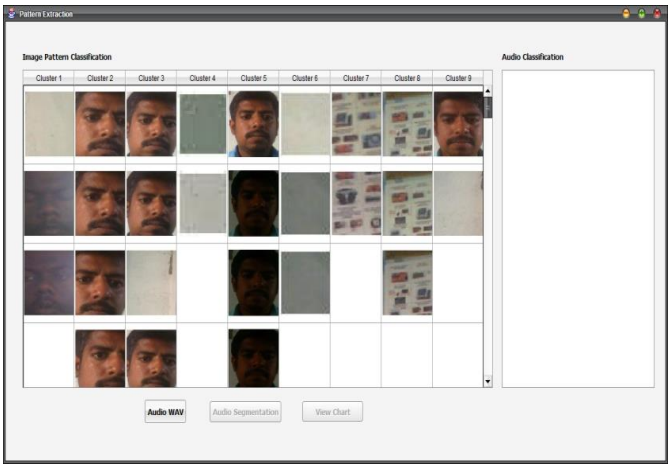


Figure 5 represents Clustered images of different angled faces.

6. CONCLUSION

It proposes and combines two orthogonal methods to utilize automatically detected human attributes to significantly improve content-based face image retrieval (up to 43% relatively in MAP). To the best of our knowledge, this is the first proposal of combining low-level features and automatically detected human attributes for content-based face image retrieval. Attribute-enhanced sparse coding exploits the global structure and uses several human attributes to construct semantic-aware code words in the offline stage. Attribute-embedded inverted indexing further considers the local attribute signature of the query image and still ensures efficient retrieval in the online stage. The experimental results show that using the code words generated by the proposed coding scheme, we can reduce the quantization error and achieve salient gains in face retrieval on two public datasets; the proposed indexing scheme can be easily integrated into inverted index, thus maintaining a scalable framework. During the experiments, we also discover certain informative attributes for face retrieval across different datasets and these attributes are also promising for other applications (e.g., face verification). Current methods treat all attributes as equal. We will investigate methods to dynamically decide the importance of the attributes and further exploit the contextual relationships between them.

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