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Topic of Research: Security Provisioning of IoT Based Networks Using Blockchain

Findings

1) **Identification of Face from Images and Live Videos:** The thesis aims to handle criminal information through a smart IoT application is a very serious point in terms of security. According to the face recognition of users, the security of IoT applications can be improved at a very high level. Here, develops an efficient face recognition algorithm from images and Live video streaming for an IoT system based on K-nearest neighbor and Support Vector machine learning to recognize the person from the local database and extract the features of the faces. The accuracy of the proposed face recognition has been calculated approx. 96% in case of a created database of single-person video or images, while there is a bit of decrease in accuracy in case of more than 3 person's videos.

2) **Analysis of Proposed Recognition System:** Analysis of proposed arbitrary posture recognition systems has come to be a crucial research area. Here, we have performed an analysis of proposed arbitrary recognition with different datasets. The result of the comparative analysis concludes that the low-resolution and black-white datasets have given more accuracy. While the high-resolution and large size of datasets have given low accuracy comparatively.

3) **Generate Blocks, Timestamp, and Signature of Recognized Faces Information on Blockchain:** Here, develop an efficient algorithm through which we can store criminal information in an immutable form on the server. The proposed solution and implementation have ensured the security of criminal information through the immutable blockchain features. Also, generate the block number, hash value, as well as signatures of every recognized criminal person.

4) **Identification and Location Tracking of the Recognized Person through Blockchain Data Storage:** Design an algorithm for tracking the Geographic Location of a Recognized Person through live Images with decentralized Blockchain Storage. These are also used to fetch the previous transaction records to handle the security of applications. In the experiment, the accuracy, real-time criminal location, and execution time of the output were all assessed using the

ORL, Utrecht ECVP, Aberdeen, Extracted Faces, and self-created datasets with synthesized information such as criminal_id, fir_no, and city etc. There were also evaluated the elapsed time and execution times at different sizes and DPI combinations. In the case of images, Low-resolution datasets have more accuracy and tracking efficiency than high-resolution datasets.

5) **Identification and Location Tracking with Live Video Streaming through Blockchain Data Storage:** Design an algorithm for tracking the Geographic Location of a Recognized Person through live video streaming. This Blockchain storage stores the recognized person's current location information in a decentralized manner for provisioning security and synchronizing all the updated users' criminal records with IoT devices in such a manner that smart devices of different locations can take actions with particular persons accordingly with the distributed blockchain server storage. In case of video streaming, the system's average accuracy is 98.5%, and its tracking efficiency is 99%. The average elapsed time was 60 e^-5 seconds and approx the average execution time of 60 seconds.