



CRIMINAL AND MISSING PERSON IDENTIFICATION SYSTEM USING IMAGE PROCESSING

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Abstract: Everyday, thousands of people go missing around the world including children, teenagers, the mentally challenged, the elderly with Alzheimer's, and others. Most of them remain untraced. To this missing case entry is updated in police station. By using web camera technology compare each person with the available database and find these people. This system designed to find the criminal and missing people. If the missing person or criminal found in the Web Video streaming then send the location of missing person to police station. After missing person found in the Web Video streaming, send location Email to Police station. In order for our system to fulfill its crucial role in matters of security and authentication. Every administrative function in this system is carried out by the admin here. The administrator has the ability to view, add, and remove user police. The system recognizes the outcomes and produces output in line with them. This will facilitate law enforcement's search for a specific individual.

Keywords: Missing Person, Finding, Face Recognition, Web Camera.

I. INTRODUCTION

A missing person can be characterized as the one who can be a child or an adult – who is lost, voluntarily or involuntarily. There are various categories of missing cases of which only 43% of missing cases' reasons are known, 99 % are juvenile runaways, 2500 cases are due to family problems and approximately 500 cases involve strangers (both teens and adults). Women add about 52 % of missing cases and males 48%. "In India, there are no budgets allocated to finding missing people", claimed by an official source. A missing individual faces numerous challenges; few are exposed to death (murder), rape, or maltreatment. People worried about the missing person, such as parents, friends, relatives, and guardians, are subjected to stress and worry as a result of not knowing if the missing person is alive or dead. In our system, the image of the person given by the guardian at the time of missing is stored in the database by the police. Our application will automatically find a match for this image among the currently existing photographs in the database. This helps the police department to spot the missing person in any place in India. When a suspicious person is found, the picture at that instance of time is compared with the images uploaded by the police department at the time of missing through the face recognition model. If a match is found, it will be notified to the police in the form of an email message along with the location of where the person is found. Should the uploaded photo not be found, a new entry containing the picture will be made in the database. In this manner, the time it takes to find someone's details after they are located is reduced... Sometimes, the person has been missing for a long period of time. The age difference is reflected in the image because aging changes the structure of the face, including shape, texture, and so on. The appearance of a person can change due to ageing, filters, poses, lighting, and so on.

Before selecting the face recognition algorithm, all of these factors were taken into account.

II. PROBLEM STATEMENT:

To develop a system for Criminal and Missing Person Identification which will take an input as a criminal's or missing person's Image and information and generates an output as logs of criminal identification.

III. OBJECTIVES

The objectives of the system are,

- To develop a system by using Image processing techniques that can be used to identify criminals by comparing images or videos obtained from crime scenes with existing criminal databases.
- To develop the system for Criminal Detection and Missing Person.
- To save time and human efforts.

- To utilize image processing algorithms for facial recognition. This involves analyzing facial features such as the eyes, nose, mouth, and face shape to create a unique biometric template for each individual. The goal is to match these templates with images or videos obtained from surveillance cameras, photographs, or video footage in order to identify criminals or missing persons.
- To help police personnel to identify criminals and missing person and provide information about a specific criminal that we are finding.
- To find criminals and missing person from live CCTV cameras.

IV. LITERATURE SURVEY

Table 4.1: literature survey

Sr.no	Author and Title	Proposed System	For this paper we referred
1.	AniruddhaDey, "A Contour based Procedure for Face Detection and Tracking from Video " 3rd Intuit Conf. on Recent Advances in Information Technology I RAIT-20161	In this paper primary goal is to recognize location of faces from video. Moreover, finding face motion leads to be a part of face recognition system. Firstly, face edges are detected using Robert edge detector followed by a set of arithmetic operations between an initial frame and the nearest ones. Thereafter, non-desired edges and noise are removed by Gaussian filtering technique. A logical operation is then performed between the previous two output frames and noiseless face contour frame for detecting edges corresponding to face video. Finally, four corner points i.e. top left, top-right, bottom-left, bottom-right is computed to draw rectangle around the face and detect face contour of each frame. To track human face from video, scalar and vector distance between four corner points of two consecutive frames are calculated. Displacement of corner points means position and location of face changes in the next frame.	Referred following technique 1. Face Detection 2. Moving Face Contour Detection 3. Face Tracking
2.	Andreas Ess, Bastian Leibe, Konrad Schindler, Luc Van Gool, "A Mobile Vision System for Robust Multi-Person Tracking " 978-1-4244-2243-2/08/\$25.00 ©2008 IEEE	Propose a way to closely integrate the vision modules for visual odometer, pedestrian detection, depth estimation, and tracking. The integration naturally leads to several cognitive feedback loops between the modules. Among others, we propose a novel feedback connection from the object detector to visual odometry which utilizes the semantic knowledge of detection to stabilize localization. Feedback loops always carry the danger that erroneous feedback from one module is amplified and causes the entire system to become instable. We therefore incorporate automatic failure detection and recovery, allowing the system to continue when a module becomes unreliable. The approach is experimentally evaluated on several long and difficult video sequences from busy inner-city locations. Our results show that the proposed integration makes it possible to deliver stable tracking performance in scenes of previously infeasible complexity.	Object or multi-person tracking-by-detection with additional depth information.
3.	Rolf H. Baxter, Michael J. V. Leach, Sankha S. Mukherjee, and Neil M. Robertson, "An Adaptive Motion Model for Person Tracking with Instantaneous Head-Pose Features" IEEE SIGNAL PROCESSING LETTERS, VOL. 22, NO. 5, MAY 2015	It presents novel behavior based tracking of people in low-resolution using instantaneous priors mediated by head-pose. We extend the Kalman Filter to adaptively combine motion information with an instantaneous prior belief about where the person will go based on where they are currently looking. We apply this new method to pedestrian surveillance, using automatically derived head pose estimates,	Intentional tracker could significantly outperform the standard KF on both video and synthetic datasets containing sudden changes in behavior.

		although the theory is not limited to head-pose priors.	
4.	He Guohui ,Wang Wanying, “An algorithm for fatigue driving face detection and location ” 2015 8th International Conference on Intelligent Computation Technology and Automation	To detect and locate face region accurately, improve real-time, accuracy, and reliability of face detection in the fatigue driving warning system, according to the theory put forward by Yang, combined with skin color segmentation and edge detection technology, we mixed Gaussian Model and Oval Clustering Model.	Understand following face detection techniques : 1. Skin color segmentation 2. Color Gaussian model 3.Face edge feature extraction
5.	K. V. Arya, Abhinav Adarsh, “An Efficient Face Detection and Recognition Method for Surveillance ” 2015 International Conference on Computational Intelligence and Communication Networks	It presented for automatic detection and recognition of human faces for surveillance purpose. The proposed method first detects skin regions in the image using a skin color model using YCbCr and HSV color space. Then apply height to width ratio followed by face region identification. Lastly PCA verification algorithm is used to detect face accurately. Train face images are used to generate feature space (face space). Test images are then projected on sub spaces and distances measured to find out best match from train images. The face space is affine subspace and face images can be represented as weighted sum of these sub spaces.	Process of Skin Detection, Segmentation, Face Detection, Texture And Illumination, Recognition
6.	PrantiDutta, Dr.Nachamai M, Department of Computer Science, Christ University Bengaluru, India “Detection of Faces from Video Files with Different File Formats ”	This paper evaluates the performance of detection system on single face from stored videos that is stored in different file formats. Stored videos contain raw homemade datasets as well as ready-made datasets. This proposed work concludes detection percentage of face detection system in different video formats. The implementation is done in two phases. The raw homemade dataset is tested on .3gp, .avi,.mov, .mp4 and a ready-made dataset is tested on .wmv, .m4v, .asf, .mpg file formats.	Process of face detection from video file, pattern recognition, object recognition, stored video database
7.	Lihe Zhang, Huchuan Lu, Dandan Du, and Luning Liu, “Sparse Hashing Tracking” IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 25, NO. 2, FEBRUARY 2016	Propose a novel tracking framework based on a sparse and discriminative hashing method. Different from the previous work, we treat object tracking as an approximate nearest neighbor searching process in a binary space. Using the hash functions, the target templates and the candidates can be projected into the Hamming space, Facilitating the distance calculation and tracking efficiency. First, we integrate both the inter-class and intra-class information to train multiple hash functions for better classification, while most classifiers in previous tracking methods usually neglect the interclass correlation, which may cause the inaccuracy	Learning Discriminative Hashing Functions Optimization Using ADM Tracking Framework with learned Hashing Functions.

V. SYSTEM ARCHITECTURE

Face Recognition is used by the proposed system to identify missing persons. The architecture of our system is presented in figure. Here, the facial features of any reported missing person who is seen on a web cam will be matched to the database and sent to the police via email. Our algorithm extracts the face encodings of the image and compare with that of the face encodings of the previously existing images in the database. If a match is found, an alert message will be sent to the concerned police officer.

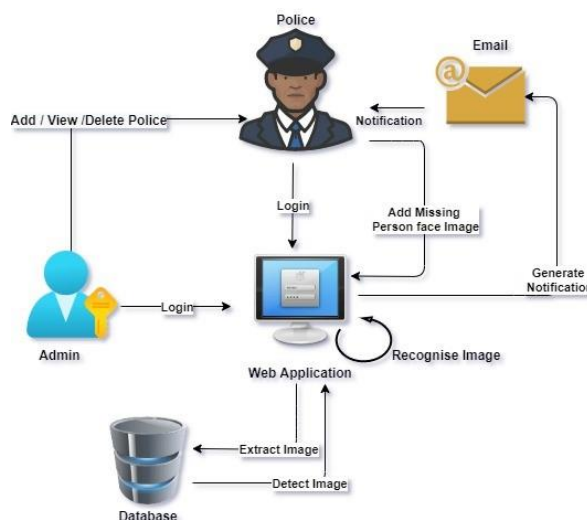


Figure 5.1: system architecture

System Architecture contains main three modules:

1. Admin Module
2. Image Processing Module
3. Alert Module

1. Admin Module:

This module collects and stores information, images and required ID proof of missing person and criminal for analysis. It can include a user interface where authorized personnel can upload data, or it could be integrated with a surveillance system to capture images.

2. Image Processing Module:

This module enhances the quality of the images captured. The module can include filters, resizing functions, and other image manipulation tools to enhance the quality of the images or videos.

3. Alert Module:

This module sends an alert to notify authorities if a match is found between the captured image and the missing persons or criminals' database. The alert can be sent through email, text message, or through a dedicated web portal.

VI. IMPLEMENTATION OF FIRST MODULE

The first module of the Criminal and Missing Person Identification system using image processing involves the following implementation details:

- 1. GUI Creation:** Design GUI (Graphical User Interface) for Branch Login, Admin Login and form for Missing Person's Information collection were designed using HTML, CSS and JSP.
- 2. Database Creation:** Create a database to store the images of missing persons and criminals. Each entry in the database should include the person's or criminal's image, along with their relevant information such as name, age, gender, etc.
- 3. Form fill-up:** Provide a user interface for users to enter information like name, age, gender, hair color, eye color, nationality of a missing person or criminal. The system should allow users to search for missing persons or criminals using their information.
- 4. User Input:** Provide a user interface for users to upload an image and ID Proof of a missing person or criminal. The system should allow users to search for missing persons or criminals using their images.
- 5. Display Details:** Display the information about the missing person or criminal, including their image and relevant details. Provide an interface to visualize the results and allow users to interact with the system for further investigation if needed.

VI. APPLICATION INTERFACE

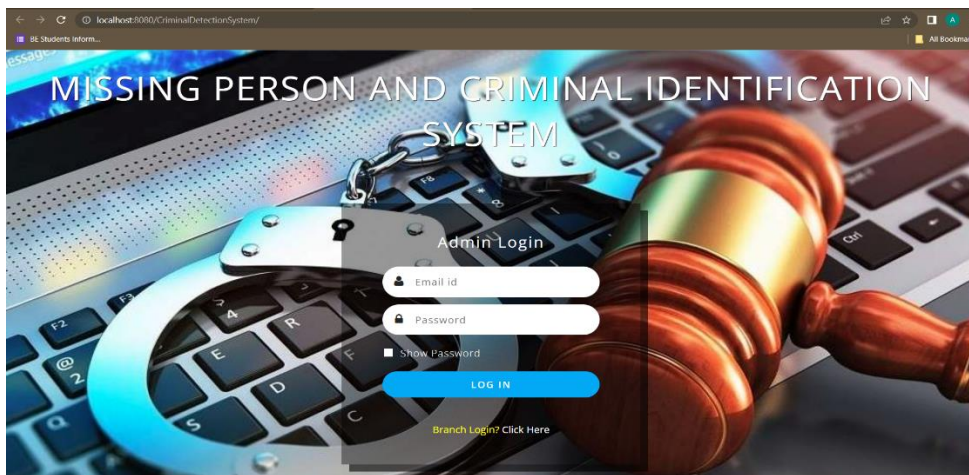


Figure 6.1: admin login

Admin Login: Admin login contains authorized central login where government can login and keep watch on every action going to be performed.

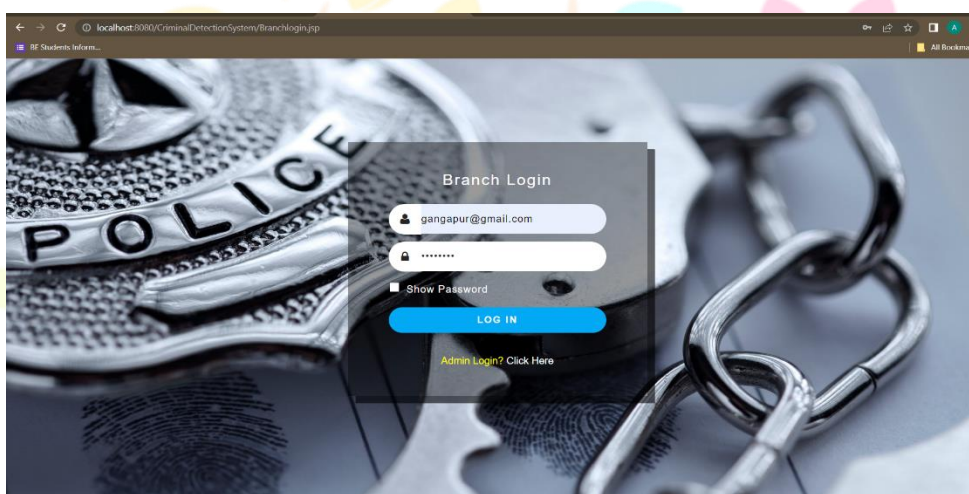


Figure 6.2 : branch Login

Branch Login: In branch login police stations can login with their valid login id's and password. After successful branch login, according to their area wise data of missing person and criminal will be entered by police.

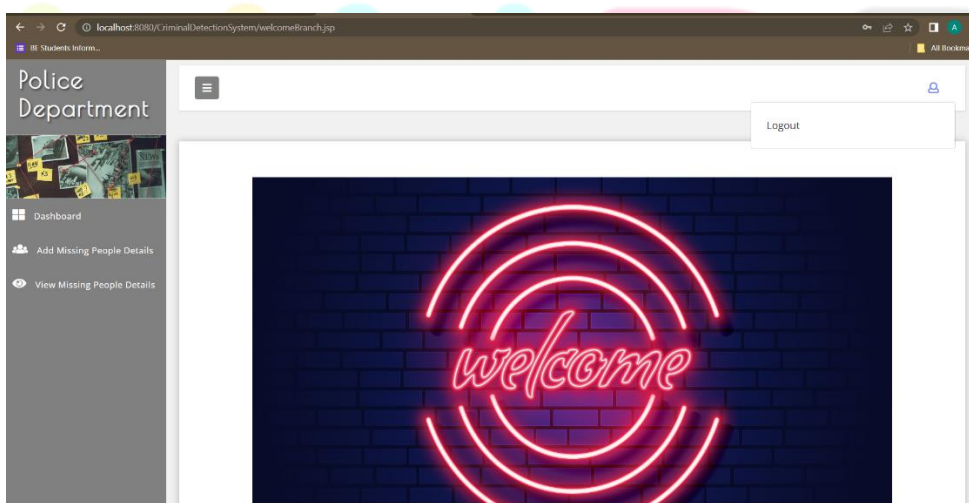


Figure 6.3: dashboard

Dashboard: After successful branch login dashboard will display. It contains add missing people details and view those details.

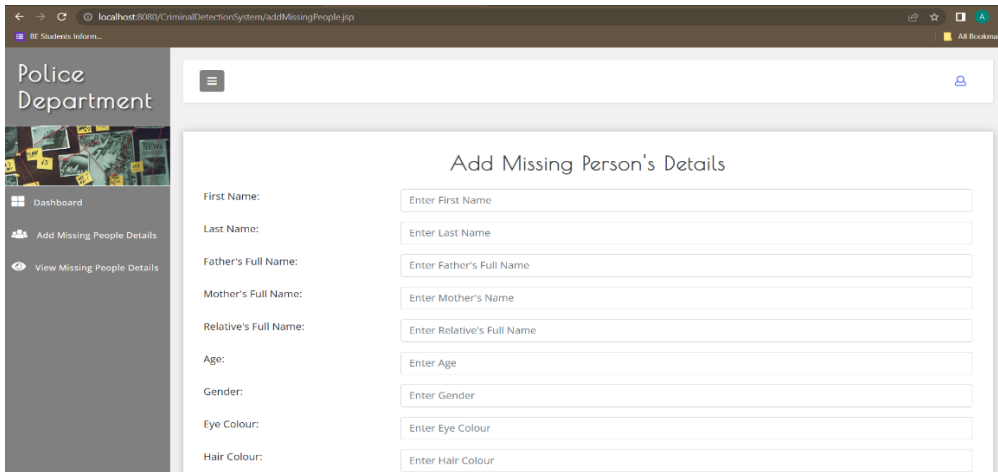


Figure 6.4 (a): inserting missing person's details

Add Missing Person's Details: Police officer will fill this form for missing person details.

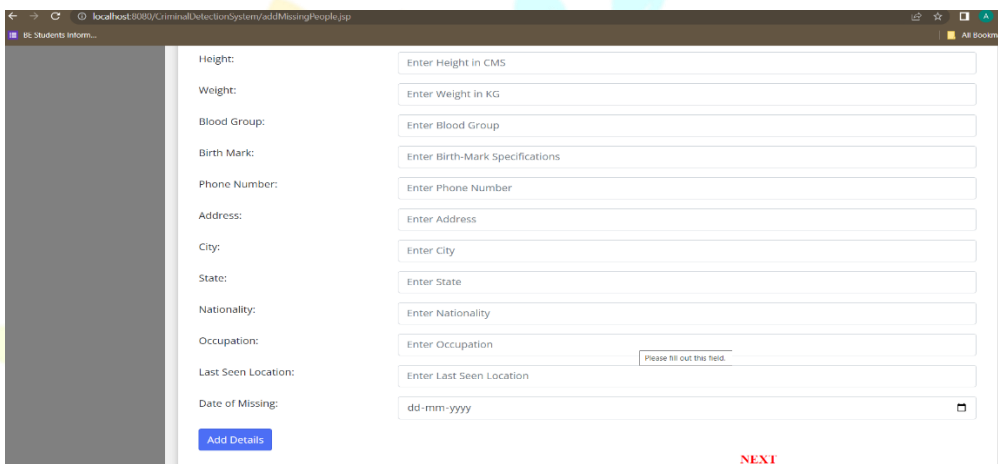


Figure 6.4(b)

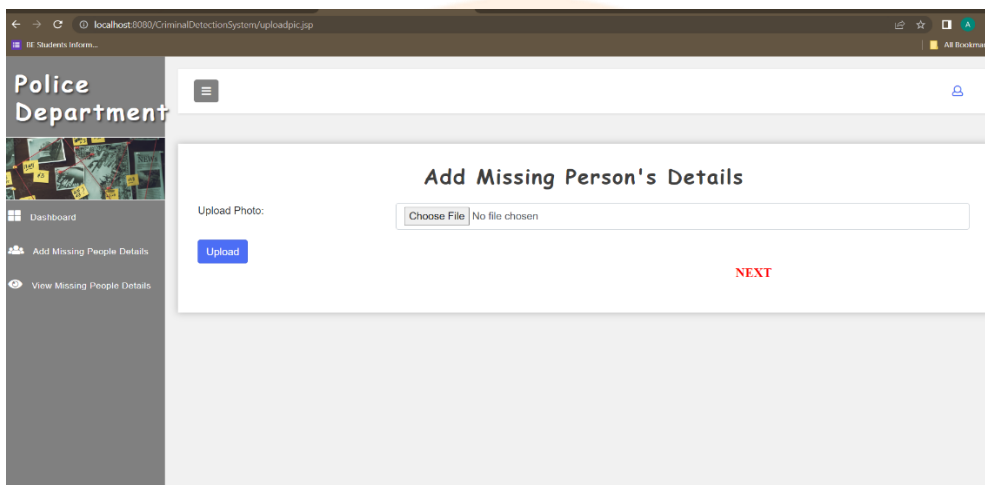


Figure 6.5: upload an image of missing person

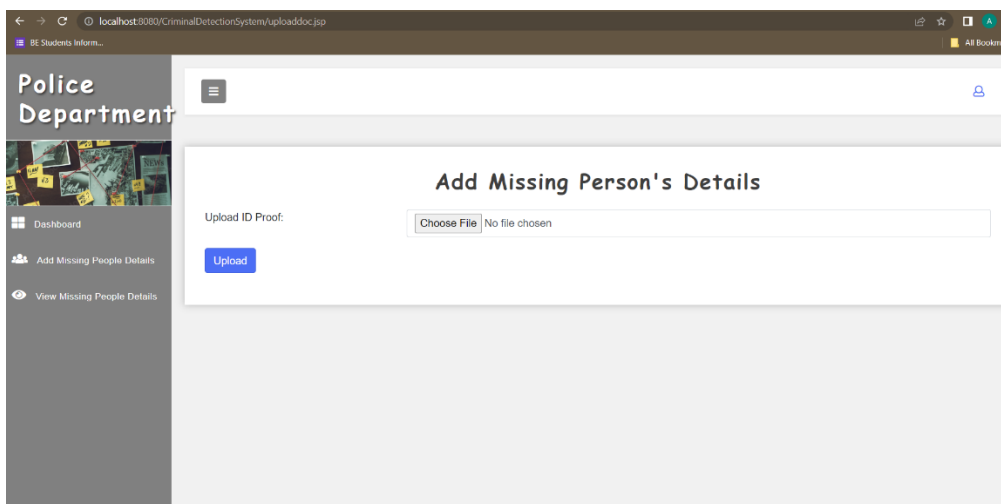


Figure 6.6: upload an id proof of missing person

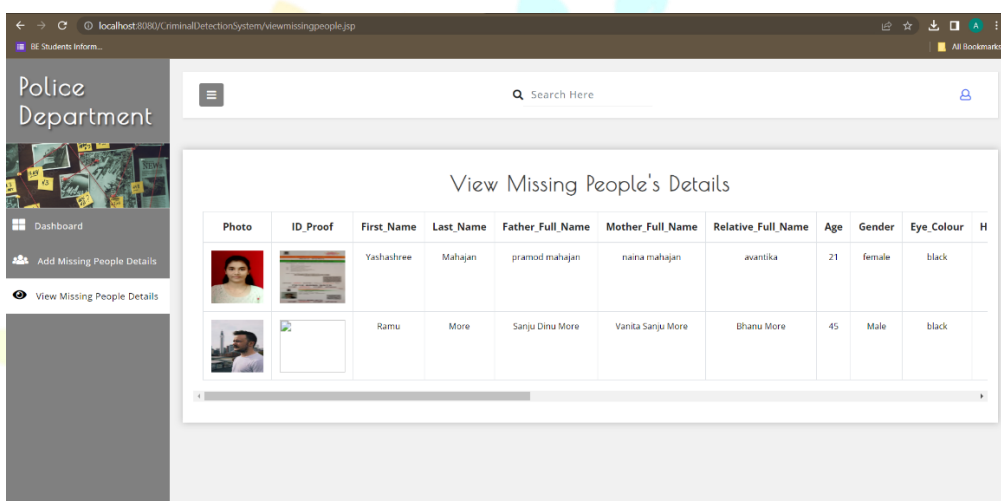


Figure 6.7: view all inserted records of missing person

VII. CONCLUSION

The first module, which included a literature review, was implemented successfully. This module's standout features include the ability to add police stations, add missing person data, images, and ID proofs, as well as view entered information regarding criminal activity and missing persons. The primary uses of this system are the identification of juvenile offenders and elderly people who go missing. This can be used to identify elderly people, physically challenged children, missing children, and give them to their guardians with the assistance of the police.

VIII. REFERENCES

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