Morsecode Authentication Secured Based System Through Artificial Intelligence And Iot

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Abstract- *In the dynamic landscape of technology and security, robust authentication systems are increasingly crucial. A novel approach emerges by integrating Morse code with cutting-edge technologies like Artificial Intelligence (AI) and the Internet of things (IoT).This Morsecode Based Secured Authentication is a System capitalizes on Morse code's simplicity, efficiency and the Resistance to private communication, enhancing it with in artificial Intelligence and IoT connectivity. Each user is assigned a unique Morse code pattern as their digital signature, dynamically Generated for heightened security.*

Keywords- Dots, Dashes, Numbers, Morsecode chart, Eye Tracking, Image Frames, PIN entry, Secure password.

I. INTRODUCTION

In an era where data security and privacy are the paramount, the Integration of Morse code, Artificial Intelligence (AI), and Internet of Things, offers an innovative solution for secure Authentication .Morse code, a chain of dots and dashes, has been used for communication for communication for over a century due to its simplicity and reliability.The combination of Morse code, AI and IoT facilitates mult-Factor authentication, enhancing security further by incorporating additional layers of verification, such as biometrics or location–based data.With its versatility,the cipher can transform any message into a cryptic code,ensuring secured communication to the Revolutionize authentication methods across various sectors,From personal devices to critical infrastructure, ensuring aSafer and more reliable digital environment.Data technology interdisciplinary collaboration involves a diverse blend of expertise to tackle complex challenges the Information interference, set of rules improvement and erato resolve analytically complicated issues.Gaze-primarily based totally authentication refers to locatethe attention region throughout sequential photograph frame,and monitoring eye middle over time.

II. LITERATURE SURVEY

[1] Dr.Rekha.B.Venkatapur, Pujari Vishnupriya, Dandu Niharika,N.Sai Jahanavi, Bhavani K G; Morsecode Security , To establish a forum for individuals to physically convene and exchange ideas and a challenged users to make exclusive profile accessible slowly to them pierce. Eye blinking grounded systems provide optimistic system safety and usability solutions. But Environmental and lightining conditions, limitations related to various algorithms were some of the difficulties.

[2] Sanjay H, Dr Kiran Gupta : Morsecode Based System Using Machine Learning., A robust authentication system is crucial for ensuring secured access to sensitive data needed as utmost in today's interconnected world,a significant portion of the global population grapples with challenges surrounding authentication and security measures.Dataset needs to be trained. Accessing of changes is lengthy technical knowledge is required to troubleshoot during erorrs.

[3] **Mrs. Mamatha B , Priyanka , Varsha , Shubankar: Morsecode Authentication Secured Based System through ML,** Less reliability on the physical devices like ,mouse or keyboard. Entry of PIN numbers can be easily traced as it leaves physical footprints behind.The existing gaze-based system is inconvenient as it is done by visinory it maps the numbers directly on the screen.

[4] **Sunil Gowda S, Smitha N : Morsecode Authentication Secured Based System Through AI,**The dangerous impact are caused by CVS and others.The high visiual demand of the frame can lead to eye strain and fatigue screen,Continuous furthermore,computer usage can lead to increase instances of eye strain and digital eye fatigue,particularly when staring at screens at screens for extended periods.

[5] **Renuka N, Devaraju B.M : Morsecode Authentication Secured Based System Using Eye Blink through Haar Cascade and Facial Landmark Algorithm,** Finding the eye blinks through the Morse Code, in which numbers are represented in points and dashes, Which will utilized to make the password authentication and crafting the passcode is referred to as a key step in securing your personal information through eyeblinks-based

authentication is enhancing the conventional passcode input by addition eye-blink base morsecode enabled passcode entry enhances security measures additional level of security.

[6] **Ayushi Srivastava : Morsecode System Authentication Through Artificial Intelligence,** The consumer may also engage with the gadget way to the GUI. The passcode is entered through webcam and is transformed to the Morsecode within the assit ot this. If the consumer has forgotten his password then he can use the Key-word to verify and replace the winning passkey with a substitute one.If the penetrate passcode is accurate , it presents as success authentication.

[7] R. Revathy and R. Bama : Advanced safe PIN –Entry Against Human Shoulder –Surfing., In pc security, Shoulder browsing refers to usage of direct inspection techniques, along with peeping over a person's shoulder browsing is often assamble password's,passcode protection codes associated data.

III. EXISTING SYSTEM

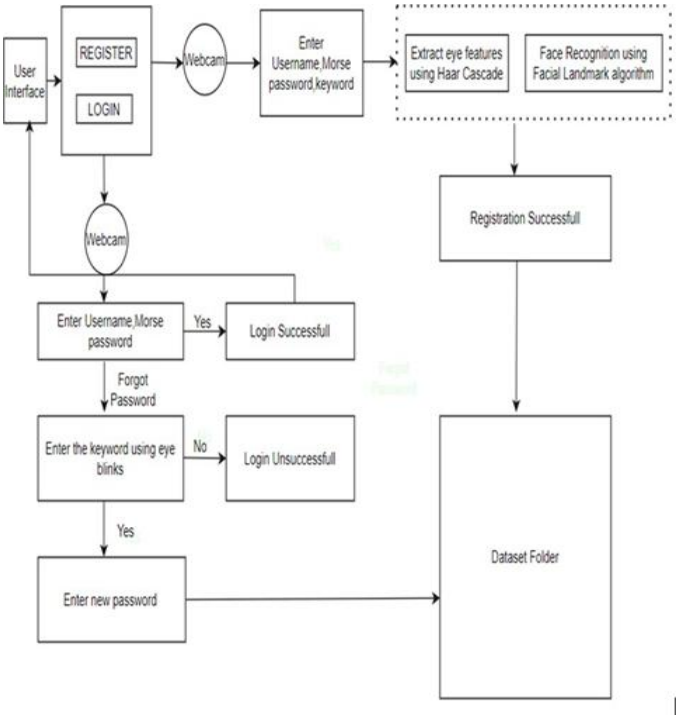
Incongruous evolving landscape of authentication and authorization technology in the 21st century, the reliance on traditional personal identification numbers(PINs) for user verification and safety which gained widespread use subsequent 90s,has faced increasing challenges. Morse code-based authentication system has lack on many things like limited accessibility lack of multifactor authentication, complexity in implementation .Morse code authentication technologies requires significant technical expertise and resources ,making it challenging for organizations with limited technical capabilities to implement and maintain the system effectively.

IV. PROPOSED SYSTEM

The model consists of a aspect database.GUIthe interface so that user can seamlessly engage with the system.Pygame or Opencv hired in to make it.

A. Design

software Procedure:



Hardware Procedure :

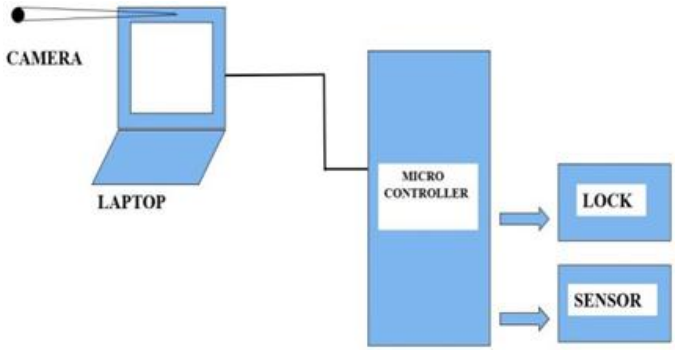


Fig.1 Implemented Block Diagram

In the frontend,users initiate the registration process by providing a user ID,a chosen password,and a keyword of their preferences.Once registered,users can access using their designated username and password.The unique aspects lies in the input method for the PIN,facilitated by an internet camera,where the users inputs the PIN in morse code.In the backend,the entered PIN is cross-verified with the stored PIN in the database,corresponding to the user registration.If the entered PIN is incorrect,the system exits the authentication process.Conversely,if the entered PIN matches the stored value,the system exhibits a valid verification message.In case a user forgets their password,an additional of security is introduced through the use of a keyword.This approach not only enchances security through the unique PIN entry method but also provides a reliable mechanism for users to recover and update their passwords seamlessly.

B. Objectives

1. To establish a robust system for verifying user identities and ensuring security are'nt completely blind
2. To develop a robust password verification mechanism using morsecode
3. To ensure precise recognition of specified facial features by the system

C. Methodology

1. User Registration Process:When a newcomer wishes to register,they provide their name along with a series of facial images for enrolment.The collected face data is processed to extract facial features using Haarcascade and LBPH algorithms.This data,along with the user's name,is stored securely repository.

2. User Login Process:a) Facial Recognition:The user initiates the login process by presenting their face to the camera.Upon successful recognition,the system proceeds to the next step.Otherwise,an error message is displayed.

b) Manual Authentication:The user provides their login credentials for manual authentication.The system validates the applied login details against the stored user data in the database.If the credentials are verified,the process continues:otherwise,an error message is displayed.

c) Eye Aspect Ratio(EAR)Based Morse Code Selection:The user is prompted to bat their eyelashes a specified numbers of times to generate an EAR value.

d) Morse Code Verification:The user's generated Morse Code Associated With their account.If the Morse code match,the user is successfully authenticated,and access is granted.If there is mismatch,the authentication process is terminated, and the user is prompted to reattempt the login.

3. User Registration Module:This module is responsible for capturing user information during the registration process.

4. Manual Authentication Module:This module manages the manual authentication process,where the user provides their user name and password.
5. Face Data Storage Module:This module is responsible for securely storing the collected face data,including facial features and images,in the system's database

D. Algorithm

1. Face Recognnition Algorithm:

Once the user has registered,user can register their face for the purpose of activate validation mechanism using face recognition.It will be stored as the image data stored in the backend and will utilized securely authenticate the system each time when a user wishes to log in.Facial landmarks are utilized for limiting and addressing notable areas or facial parts of the individual's face,for example eyebrows,eyes,jaws, Nose,mouth and so forth.

Facial landmarks location has 2 steps:

i) To detect the key facial structures on the person's face.
ii) To identify the face's location in the images.

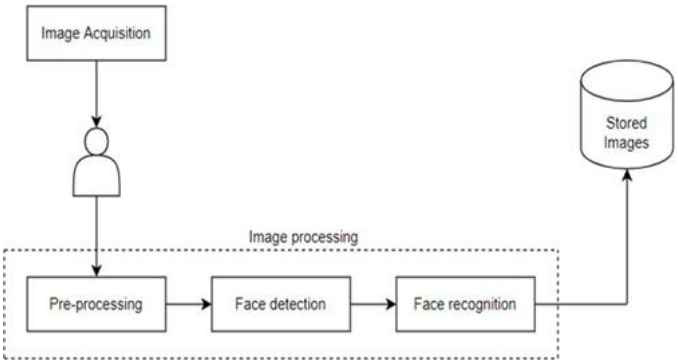


Fig.2 System diagram for face identification

2. Haar Cascade Technique:

Haar cascade is particularly effective in detecting objects by analysing features such as edges,corners,and textures in an image or video.This method is widely used for object detection in images,with applications ranging from facial recognition to vehicle detection in autonomous driving systems.It's celebrated for it's capability to recognize a vast array of objects with remarkable accuracy.

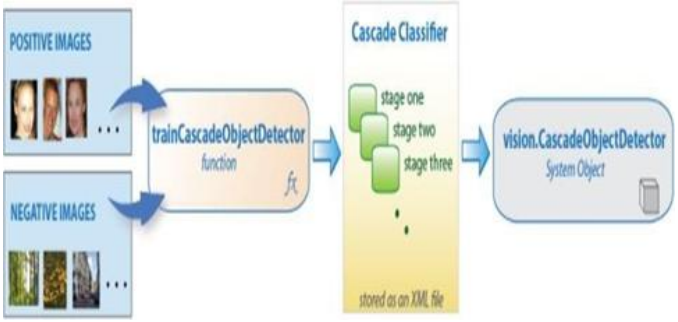


Fig.3 Working of Haar cascade technique

E. Advantages

1. Enchanced Security:By utilizing biometric data in the configuration of morsecode signals,the system provides a robust authentication mechanism that is adversity to replicate or spoof.This enhances security and reduces the risk of unauthorized access to sensitive systems or data
2. User Convenience:Morse code authentication offers a user-friendly and intuitive interface for authentication.
3. Accuracy And Reliability:The integration of artificial intelligence algorithms enchances the accurancy and reliability of the authentication system.

V. RESULTS

Fig.6 Data Set

Fig.4 Home page

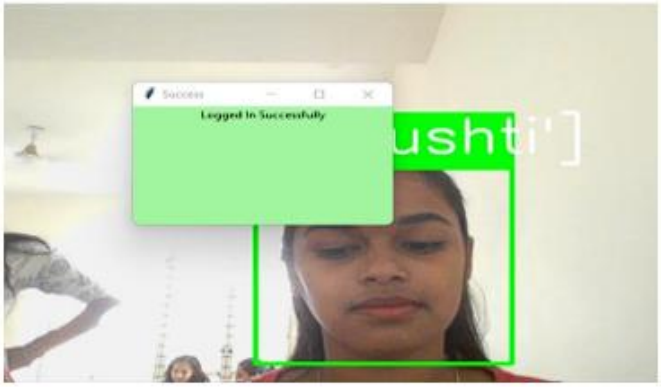


Fig.7 Login Page

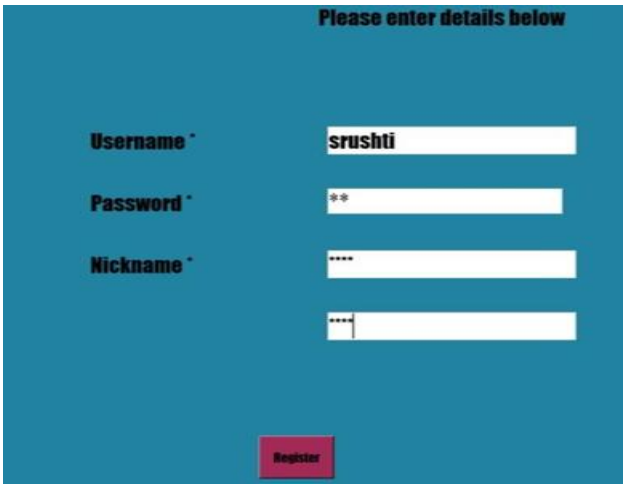


Fig 5 Register Page

Fig.8 Correct Password Page

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File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.1 (v3.7.1:260ec2c36a, Oct 20 2018, 14:57:15) [MSC v.1915 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
======= RESTART: C:\Users\anjan\OneDrive\Desktop\MORSE_CODE\main_hw.py =======
64.00089280251844
unknown
mail Sent
59.0371901295358
unknown
mail Sent
60.149051134576808
unknown
mail Sent
57.216654971515815
unknown
mail Sent
61.76745240102511
unknown
mail Sent
57.80411278186601
unknown
mail Sent
unsuccess
sent.....
Login unSuccessful
```

Fig.9 Unknown and Incorrect Password Page

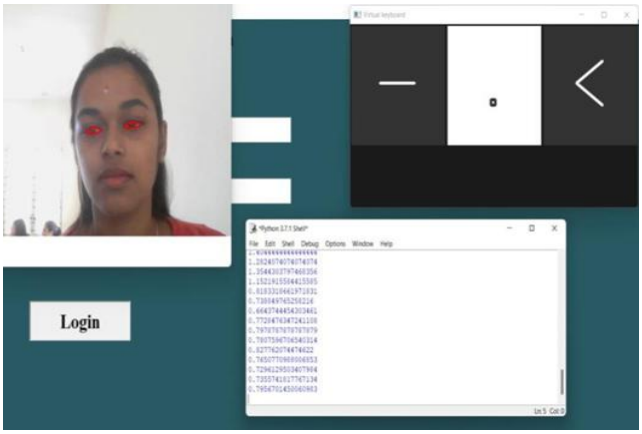

Fig.10 Morse Code Password

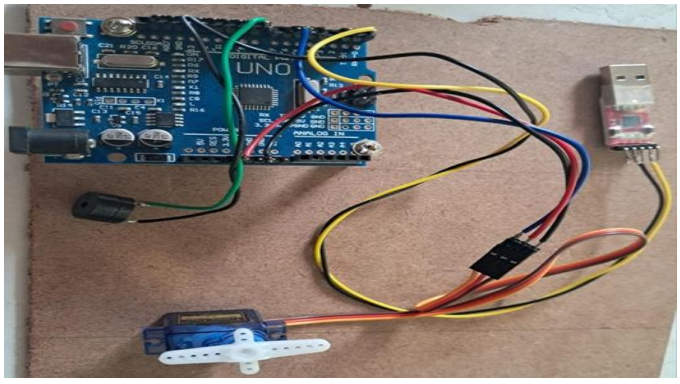

Fig.11 Hardware Model

VI. CONCLUSION

In our research,we introduce MorseNet,a unified neural network designed to detect and recognize Morse code signals within narrowband spectrograms containing multiple channels .MorseNet integrates two separate networks specialized in single detection and recognition, enabling end-to-end traning.To assess its performance, we gathered simulated Morse signals embedded in real world backgrounds, categorising them into four datasets. Our experimental findings demonstrate significance improvements over existing methods, effectively addressing longstanding challenges in the task and exhibiting robustness across various signal to noise ratios and code speeds. Additionally, the unified network architecture offers a novel approach to multitask learning, potentially extending its applicability to other domains characterized by multiple complementary subtasks.

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