Exploring Behavioral Type Biometrics: Typing Rhythm, Gait, Voice

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ABSTRACT: Biometric identifies distinct measurable characteristics which are often characterized by physiological and behavioral characteristics. It is not limited to finger prints, palm views, face recognition odor /scent. Knowledge based system identification would be based on password or personal identification number. There may be a chance of hacking password and personal identification number. The chances of forgetting password and pin number is high as human tend to forget the chances of recollecting password and pin number is very less. It is a time taking process if a person completely losses the memory then the hope of retrieving the password or Pin number is out of reach but where as in the present system that is biometric the existing system problems of forgetting will not come into picture because biometric authentication is purely based on biological factors or human characteristics . Few biometric identifiers 1) DNA 2) Retina recognition 3) Thermo grams 4) Gait 5) Keystroke 6) Ear recognition 7) Skin recognition 8) Lip motion 9) Body odor 10) Vein pattern 11) Sweat pores 12) Finger mail bed 13) Hand grip 14) Brain wave pattern, 15) Foot pattern and foot recognition

KEYWORDS: Biological Factors, Keystroke, Gait, Biometric, Human Characteristics

I. INTRODUCTION

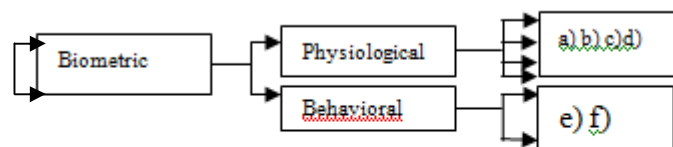M Biometric authentication are characterized into two class 1) physiological 2) Behavioral

FIG 1
a)   Face b) finger print c) hand geometry d)iris recognition e) signature f)voice

Few biometric identifiers
1) DNA 2) Retina recognition 3) Thermo grams 4) Gait 5) Keystroke 6) Ear recognition 7) Skin recognition 8) Lip motion 9) Body odor 10) Vein pattern 11) Sweat pores 12) Finger mail bed 13) Hand grip 14) Brain wave pattern, 15) Foot pattern and foot recognition

The commonly used technique is face recognition technique and finger print detection system. The face recognition technique is based on the locations of eyes eyebrows and overall analysis of face .sometimes face conditions may vary for different conditions
So different views that is illumination and condition are taken into consideration

Fig 1.1 Facial recognition considering different factors

Finger print is oldest form of biometric authentication technique. It is changeable only to some environmental conditions and during any occurrence of injuries and cuts these finger prints are difficult to recognize

Fig 1.2 Finger print recognition technique

In this paper we are going to discuss about behavior type of biomemetric i.e., typing rhythm gait, voice, rather than focusing on commonly used physiological type of biometrics like finger prints, face recognition, DNA, palm print hand geometry, iris recognition Oder/scent.

II. PROPOSED WORK

A. *Behavioral*
     It is based on the actions of person they are influenced and controlled by physiological factors.
Typing rhythm
     Now a days everything is computerized it is basically simplifies the human effort. Computers are not only used for the work purpose but also for entertainment. Computer is collection of inputs and output devices.
The output device key board plays an inseparable role. When human wants to simplify the work by means of computer they have to give the input from key board then only output will be processed.
     This key stroke recognisition or typing rhythm basically focuses on "how" data is written but not on "what" is written.
     This typing pattern is basically identified by using latency between two successive key strokes
i)Duration of key stroke
II) Finger placement
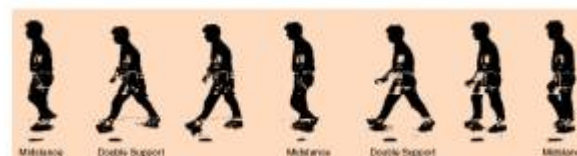iii) Pressure applied on keys

Fig 4 GAIT Recognition Samples recorded
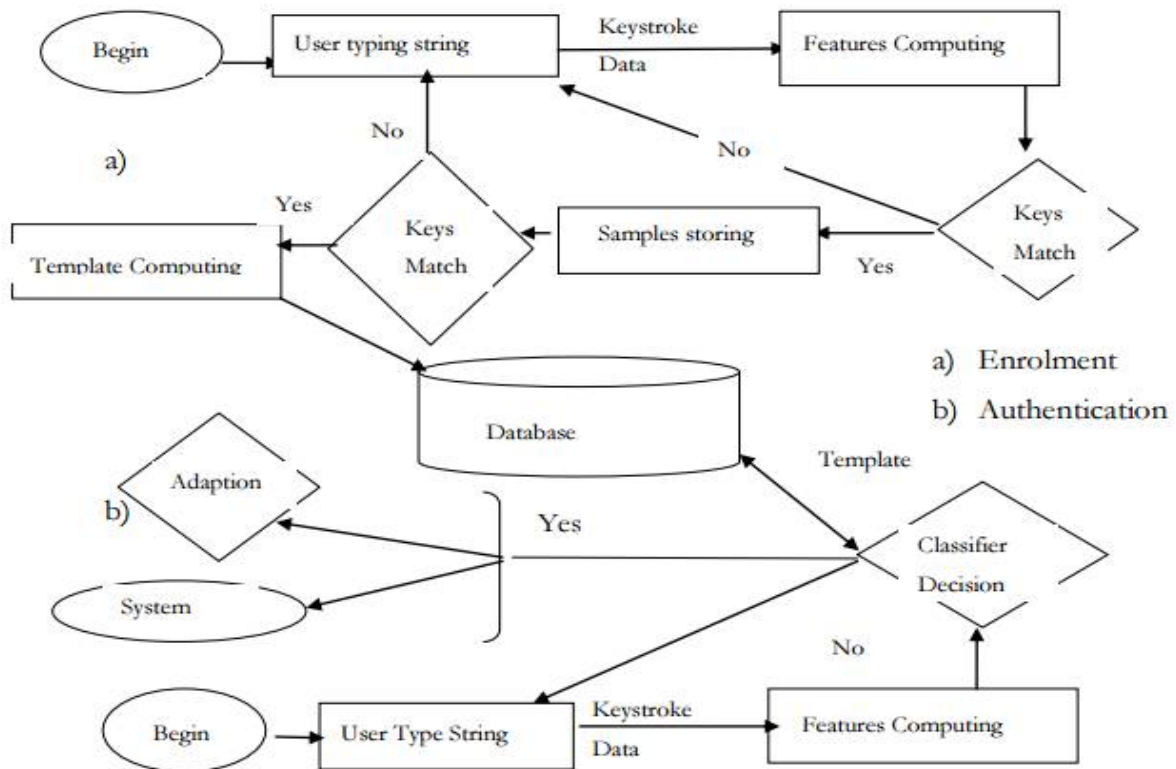
Over all typing speed
These are calculated
   i)   Press-Press
         Interval between two successive key press
   ii)   Press- Release
         Interval between press and release

iii)   Release- Press
        Interval between release and press
iv)   Release-Release
        Interval between releasing two successive keys

Fig

5 Key Rhythm Implementation

*Gait***:-**
It identifies based on the way person walks that is human loco motion the common parameters of gait are kinemetics patterns knee ankle, moments, angles.
Special temporal pattern are length width of the steps and walking pattern and co-relation between patterns.
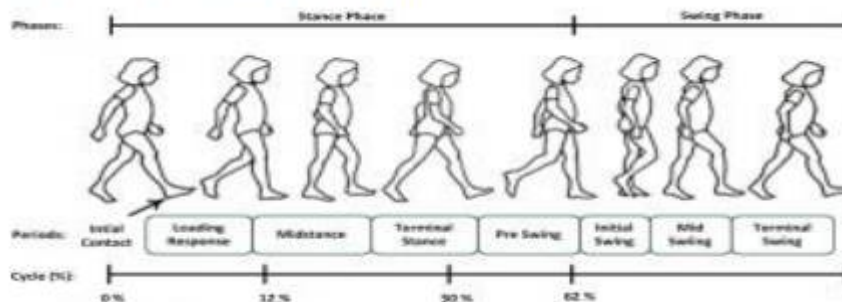

Fig 6 Gait step patterns

These are there gait recognition techniques
- i) Floor Sensor
  Sensors are situated on the mat along the flow, it work out based on ground reaction force.
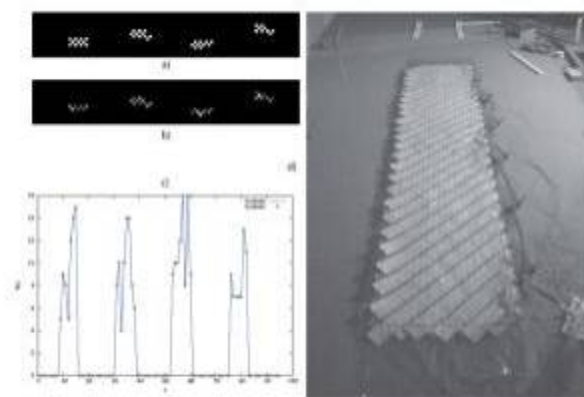
Floor Sensor

Fig 7 Floor Sensor

- ii) Machine vision based
  The image is converted from black and white and background extraction segmentation is done.

Fig 7.1 Machine vision based

- iii) Wearable sensor
  Recording sensor based on what person wears on the body
  - I. It measures acceleration ,force of walking
  - II. Measure rotation and number of degrees per second, this approach used in mobile phones.

Wearable sensor

Fig 8 Wearable Sensors

Voice:-
  It is based on other characteristics of biometric methods. This is by using two types that is
  i)Text dependent
 ii) Text independent
voice patterns system differ on each other
  - I. Fixed password length:
    User will have fixed same password sentence.
  - II. User specific text dependent system

Each and every user have a different password.
III.   Vocabulary dependent system
         Password is made from fixed vocabulary
IV.   Machine driven text independent system
         The unique text given to the user, user has to pronounce it.
V.   User Driven text independent system
         User is free to pronounce any text he/she wants
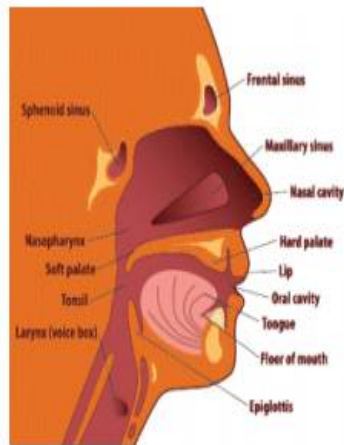
Fig 9 Human Production Speech

III. CONCLUSION

In this paper we have tried to provide an overview on following concepts like Facial recognition considering different factors, Finger print recognition technique, GAIT Recognition Samples recorded, Key Rhythm Implementation , Floor Sensor, Wearable Sensors how they practically work to what extent will it work in real life for authentication purpose

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