FINAL YEAR PROJECT

BEHAVIOURAL BIOMETRICS

TEAM

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PROBLEM STATEMENT

Authentication of Smartphone Users Using Behavioural Biometrics.

PROBLEM FORMULATION

- Most widely used authentication techniques are vulnerable.

- Continuous authentication: physiological and behavioural biometrics.

- Monitor interactions between user and the device.

MOTIVATION

- Smartphones and tablets have become ubiquitous in our daily lives.
- Small in size, so they are easy to handle and to stow and carry.
- Due to the size, they can be easily lost and may expose details of users' private lives.

LITERATURE SURVEY

"Surveying the development of biometric user authentication on mobile phones"

-W.Meng, D.Wong, S. Furnell, and J. Zhou

"Keystroke dynamics: Characteristics and opportunities"

-H. Crawford

"Face recognition across pose: A review"

-X. Zhang and Y. Gao

"Unobservable re-authentication for smartphones"

-L. Li, X. Zhao, and G. Xue

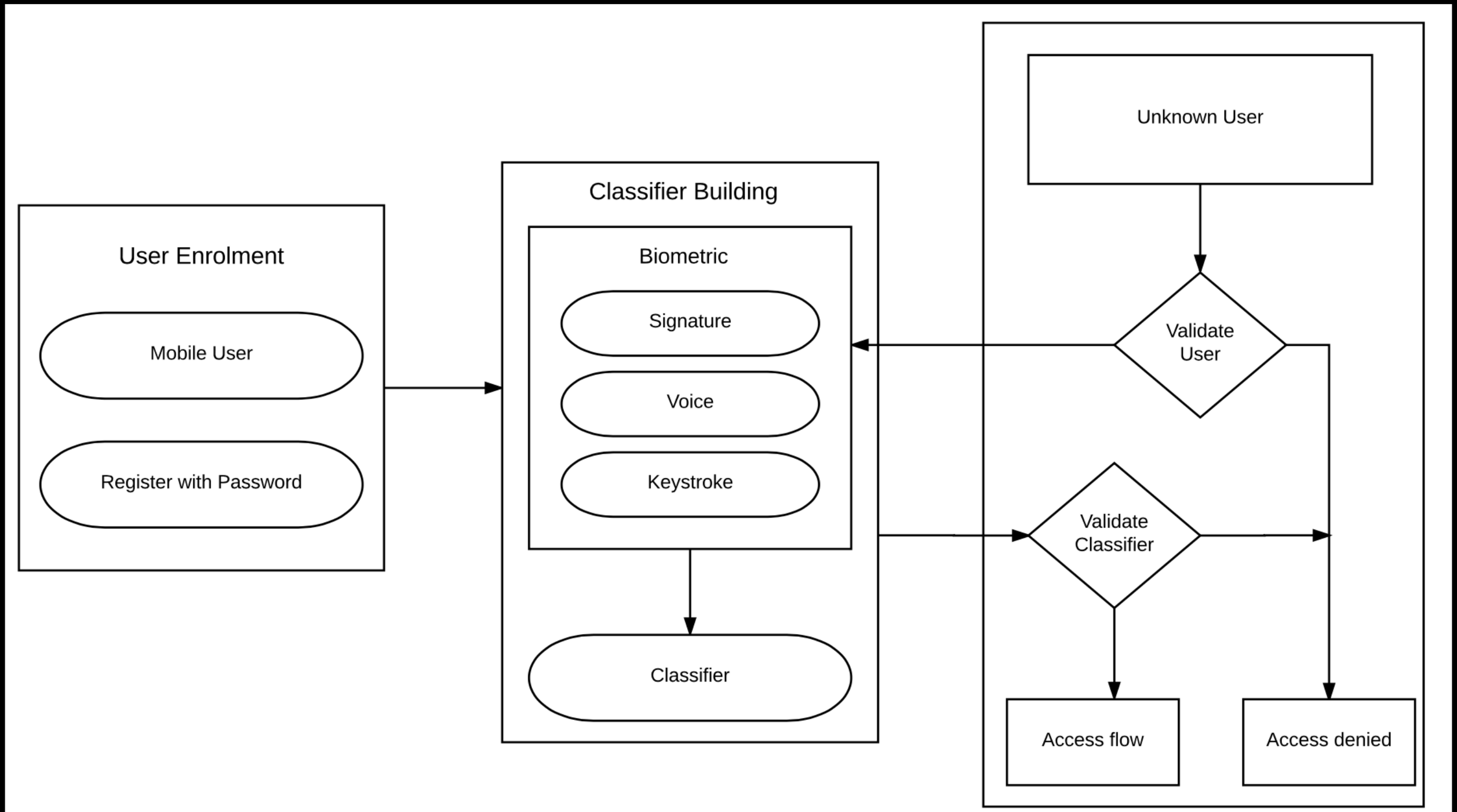
"Smudge attacks on smartphone touch screens"

-A. J. Aviv, K. Gibson, E. Mossop and M. Blaze

"Keysens: Passive user authentication through micro-behaviour modelling of soft keyboard interaction"

-B. Draffin, J. Zhu, and J. Zhang

ARCHITECTURE



SOFTWARES REQUIRED

- IDE : Eclipse Galileo / Android Studio
- Development Kit: JDK 1.6 and Android SDK
- AVD: Android Emulator / Any Smart Phone
- Compiler: DVM (Dalvik Virtual Machine)
- Testing: Unit Test

IMPLEMENTATION METHODS

- Assistance in continuous and passive authentication without requiring additional hardware
- Signature Behaviour Method.
- Voice Behaviour Method.
- Keystroke-based Authentication Method.

APPLICATIONS

- Protection of data hosted on employee’s phones.
- Reduced risk of unauthorised access.
- Parental Lock - against impersonating emails.
- CAMP and “always aware view” of typing patterns protects even in the event of compromised primary user’s password.

METHODS IMPLEMENTED

- Voice
  - Text to Speech capture
  - Storing of *word*
  - Authentication of the phone via that *word*

METHODS IMPLEMENTED (CONTD.)

- Sensor
  - Use of accelerometer to determine *xyz* co-ordinates.
  - Phone moved in various *a,b,c,d,e,f,g,h,i* positions depending on how the phone is held.
  - Use of *Sensor.TYPE_ACCELEROMETER to obtain values*
  - Authentication done by taking phone in one of the *said* positions.

CO-ORDINATES

X	Y	Z	VALUE
[3,7]	[0,1]	[5,8]	A
[0,3]	[0,1]	[8,9]	B
[-5,0]	[1,2]	[6,9]	C
[0,0]	[-6,0]	[7,9]	D
[0,0]	[0,3]	[8,9]	E
[0,1]	[3,8]	[5,9]	F
[0,2]	[9,9]	[-3,-1]	G
[0,0]	[9,9]	[-3,-1]	H
[-1,0]	[9,9]	[-3,-1]	I

METHODS IMPLEMENTED (CONTD.)

- Fingerprint
- Implementation of component in app screen.
- Storing and authentication via fingerprint.

REFERENCES

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DEMO.

“Thank You.”

–ANI, RAJAT, SHUBHAM