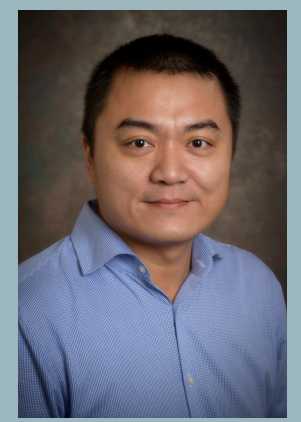
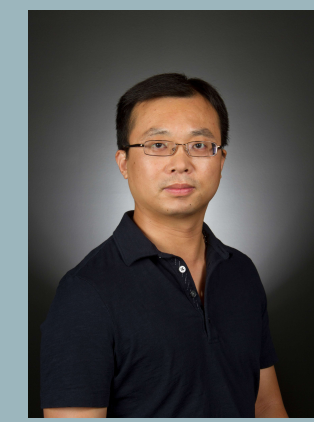


TWC: Small: Collaborative: Secure and Usable Mobile Authentication for People with Visual Impairment

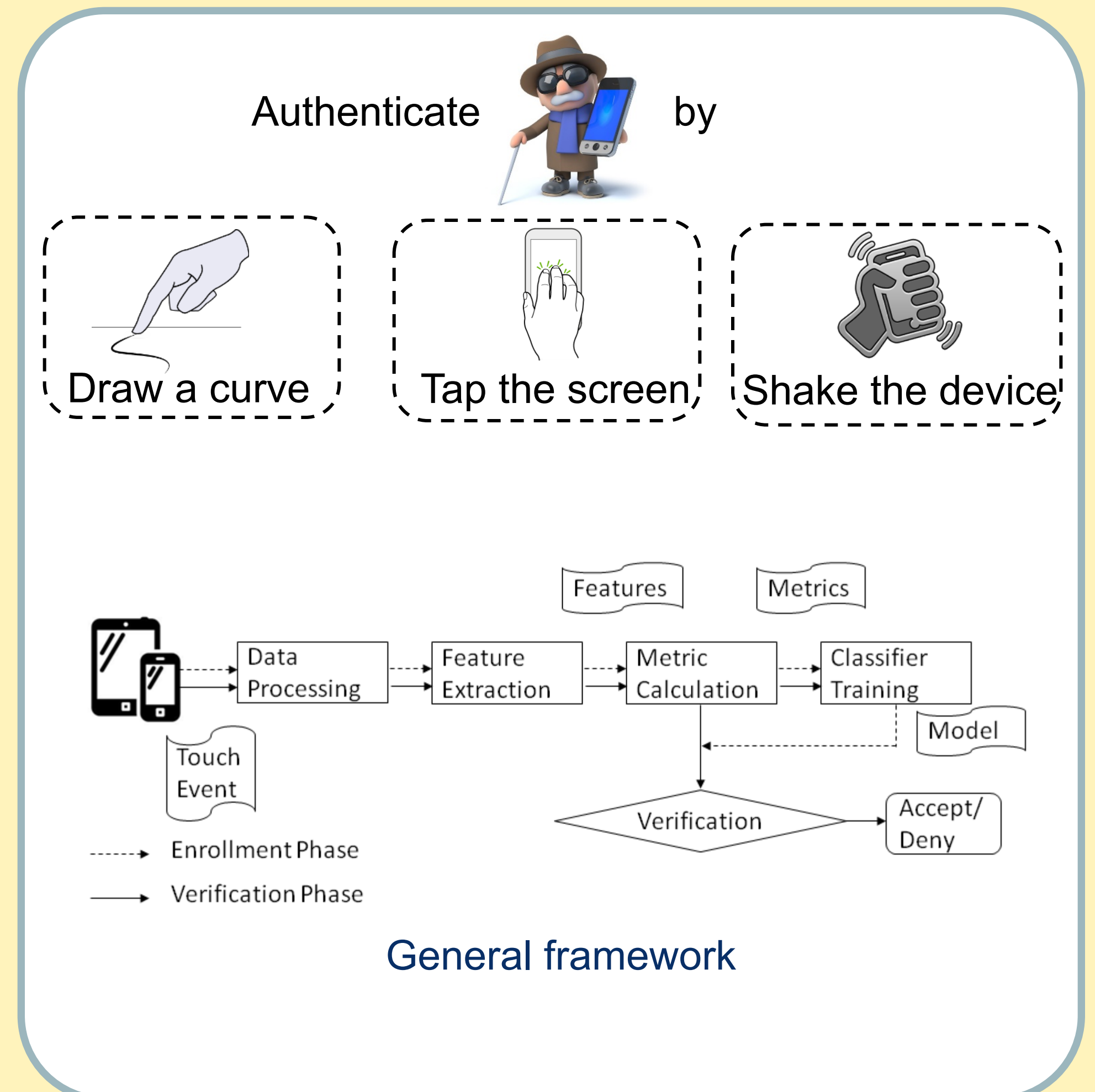
PIs: Yanchao Zhang, Arizona State University

Rui Zhang, University of Delaware



The objective of this project is to develop, implement, and evaluate a suite of secure and useable mobile authentication techniques for people with visual impairment

- 113 mobile phones are lost or stolen every minute in the US
- 285 million people worldwide are visually impaired
- Existing mobile authentication techniques are either insecure or unusable for the visually impaired
- Secure and usable mobile authentication techniques are need for this special population



Approach

- Harness the hardware advances in modern mobile devices
- Combine the something-you-know and someone-you-are paradigms
- Authenticate users using the classifiers trained during enrollment
- Curve-based authentication
- Tap-based authentication
- Shake-based authentication
- User study involving both sighted and visually impaired participants

Tap-based authentication

- Authenticate a user based on his sequence of rhythmic finger taps or slides on the device screen

“Your song your way: Rhythm-based two-factor authentication for multi-touch mobile devices”, INFOCOM’15

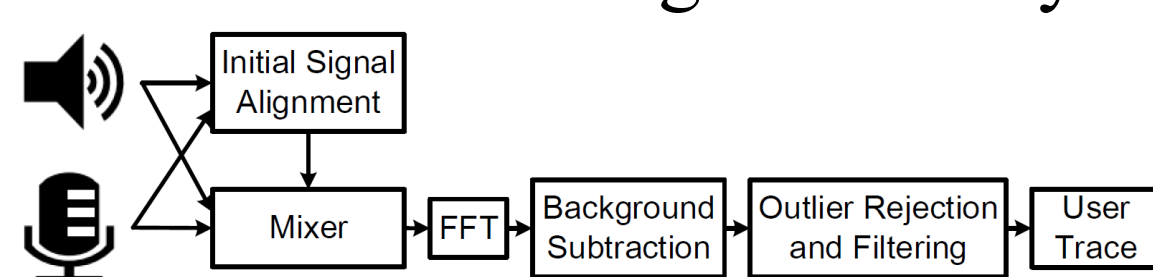
Video-assisted keystroke inference attack

- A novel attack framework that infers a tablet user’s typed inputs from surreptitious video recordings of tablet backside motion

“VISIBLE: Video-assisted keystroke inference from tablet backside motion,” NDSS’16

Continuous authentication

- Detect user departure from the change in nearby wireless signals



“iLock: Immediate and Automatic Locking of Mobile Devices against Data Theft”, CCS’16

Mobile face authentication

- Liveness detection by comparing the two photoplethysmograms
 - Face video taken by front camera
 - fingertip video taken by rear camera

“Your face your heart: Secure mobile face authentication with photoplethysmograms”, INFOCOM’17

Interested in meeting the PIs? Attach post-it note below!

