NLock Release Presentation

Location	: Neurotechnology Lab (Private) Limited - [Online]
Topic	: NLock Presentation
Presenter	: Rukshan (intern)
Date	: 2016-03-29
Product version	: v1.2 Beta

Introduction

Simple file locker

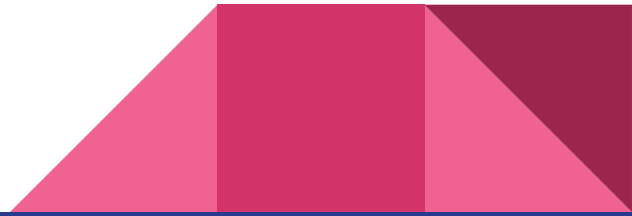
NLock is capable of locking your computer files and uses face biometric modality.

Users

Personal information hiding

Problems

- Distortion.
- No two captured templates of same person is same.
- Keeping templates discriminative power.



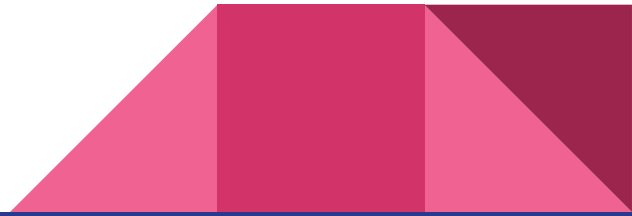
Related Approaches

- Biometric Encryption [3-8]
  - Key Binding
  - Key Generation

  Does not save the template along with the data but some helper data.

- Cancelable biometrics [9-10, 14]

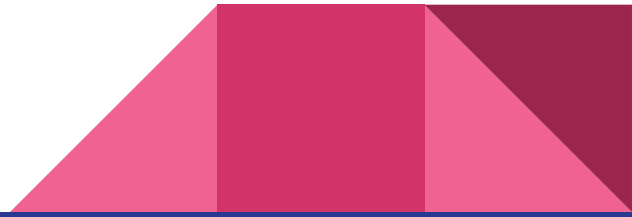
  “Cancelable biometrics refers to the intentional and systematically repeatable distortion of biometric features in order to protect sensitive user-specific data.”



Concept

Locking

$$\text{Part1} = E_{(\text{template})}(\text{content})$$

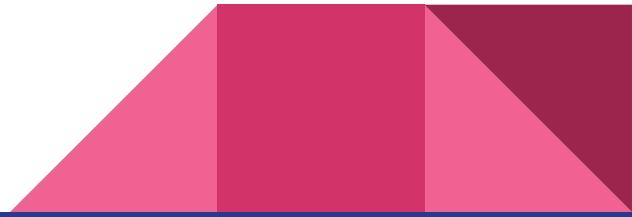


Concept

Locking

$$Part1 = E_{(template)}(content)$$

$$Part2 = E_{(part1)}(template)$$



Concept

Locking

$$Part1 = E_{(template)}(content)$$

$$Part2 = E_{(part1)}(template)$$

$$File = Part1 + Part2$$

Concept

Unlocking

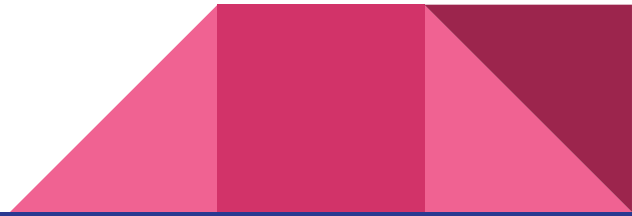
Part1 and Part2

Concept

Unlocking

Part1 and Part2

template= $D_{(Part1)}(Part2)$



Concept

Unlocking

Part1 and Part2

template= $D_{(Part1)}$(Part2)

Verification

Concept

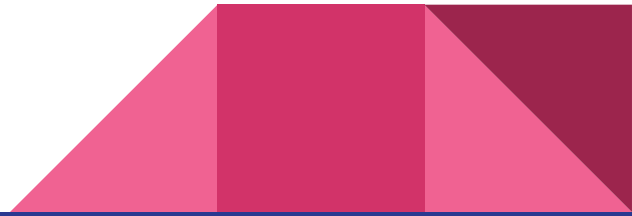
Unlocking

Part1 and Part2

$$template = D_{(Part1)}(Part2)$$

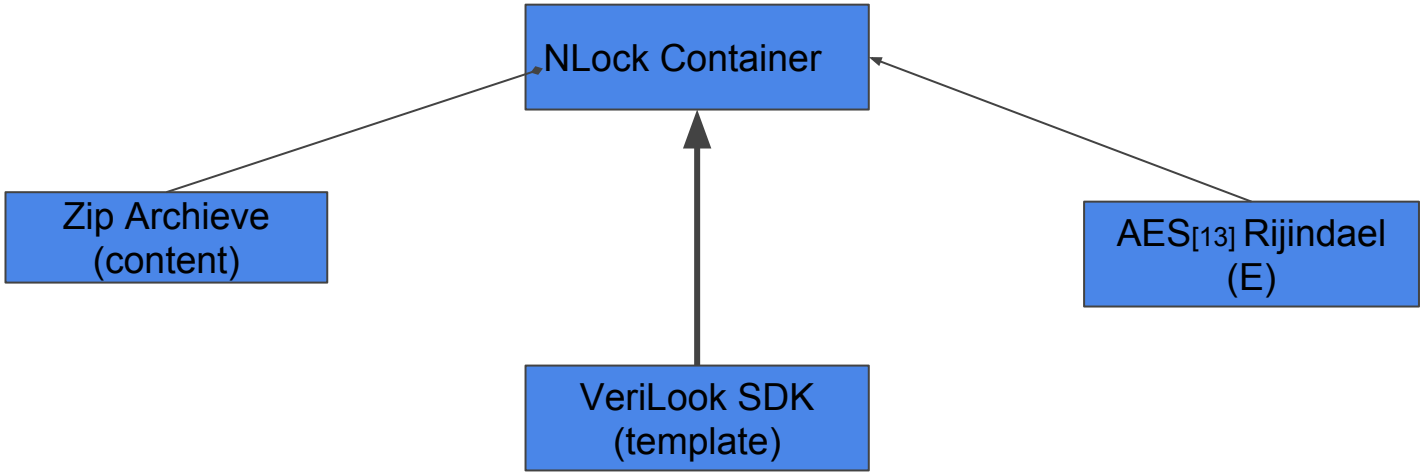
Verification

$$content = D_{(template)}(Part1)$$



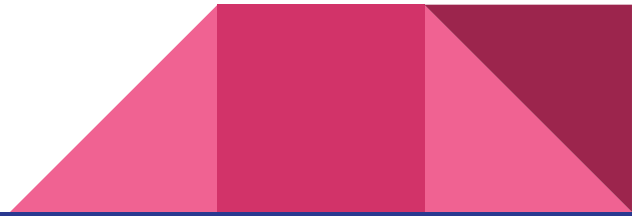
Architecture

High Level Architecture



Benefits

- No password based encryption weaknesses [12]



Benefits

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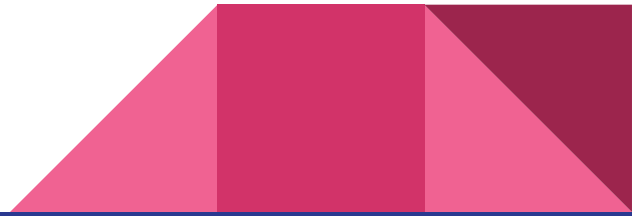
- Integrated compression capabilities.



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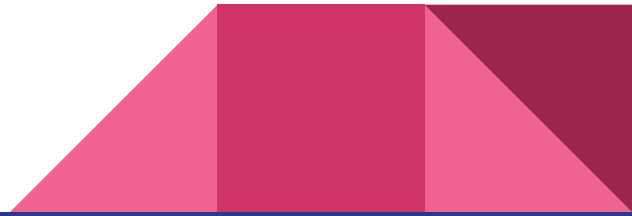
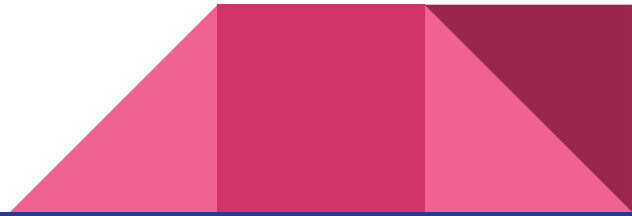


Benefits

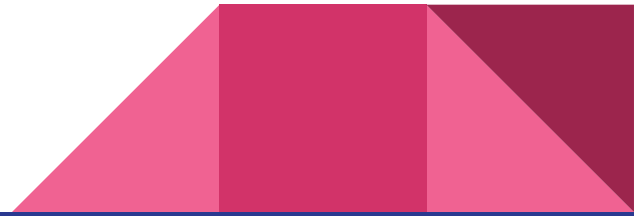
- No password based encryption weaknesses [12]
- Integrated compression capabilities.
- NLock shows how easy is to integrate Neurotechnology VeriLook SDK.
- Password based fallback option
- Windows integration
- Evolving with the Neurotechnology SDK.

Examples

- Original NPointer.zip - 1.85 MB NPointer.nlk - 1.89 MB
- xampp-win32-5.5.30-7-VC11-installer.exe - 105 MB
  xampp-win32-5.5.30-7-VC11-installer.nlk - 104 MB



NLock a start of a journey for biometric based file security and a different example for a new usage of Neurotechnology SDK.



References

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Thank you..

Attacks [1]

False Acceptance attack.
Reversing the hash
Hill Climbing attack
Nearest Impostors attack
Using statistics of ECC output