Authentication Frequency
(and Continuous Authentication)

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Outline

- Authentication frequency
- Continuous authentication (on mobile devices)
  - Implicit, transparent, data-driven, …

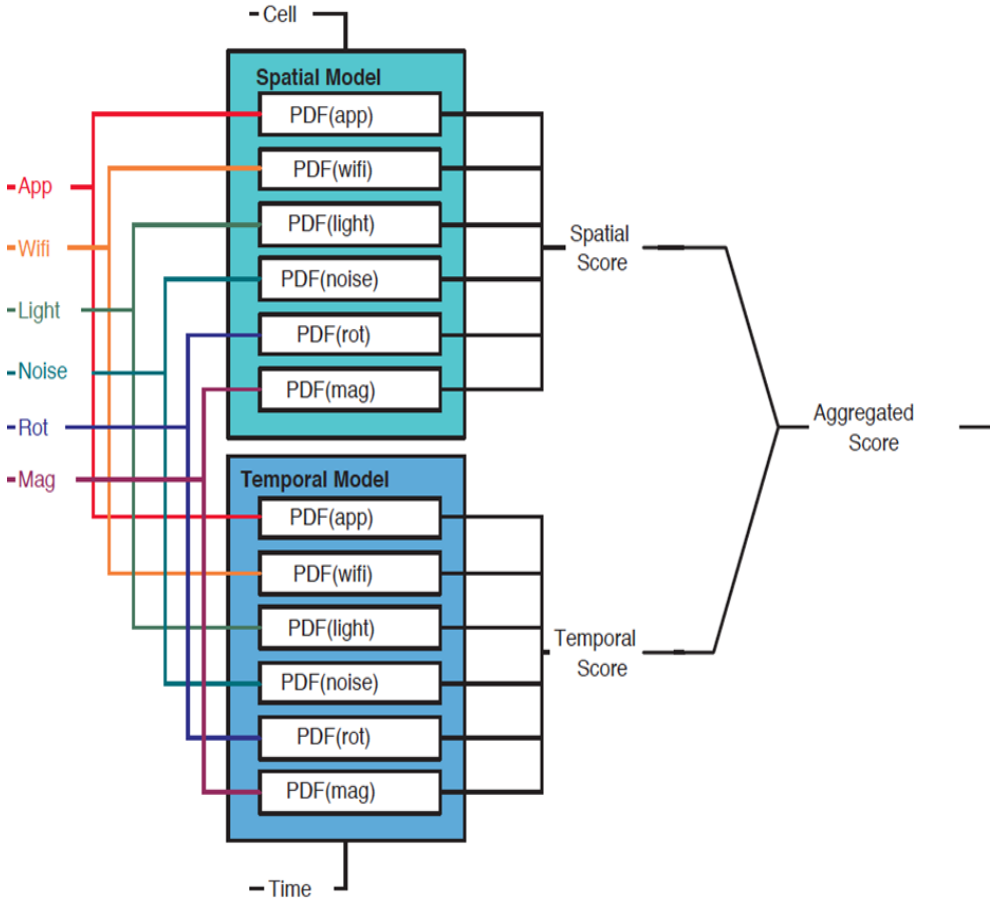
Authentication Frequency

- Typical authentication issues
  - Credential number, size, complexity
  - Duration of each authentication attempt
- Authentication frequency
  - Number of authentication attempts with same credential
  - At one or more accounts
  - Explicit vs. implicit use
- Trade-offs for increased/decreased authentication frequency

Authentication Frequency – Highs and Lows

- High(er) frequency
  - Higher frequency would seem to increase recall
  - SSO: Reduce number of credentials
  - Security
  - Model behaviour → reduce explicit use (e.g., continuous authentication)
- Low(er) frequency
  - Lower frequency (explicit use) would seem to reduce use burden (e.g., saved passwords)
  - But also seems to negatively impact recall (leading to recovery)
- Continuous authentication supports lower explicit use of credential

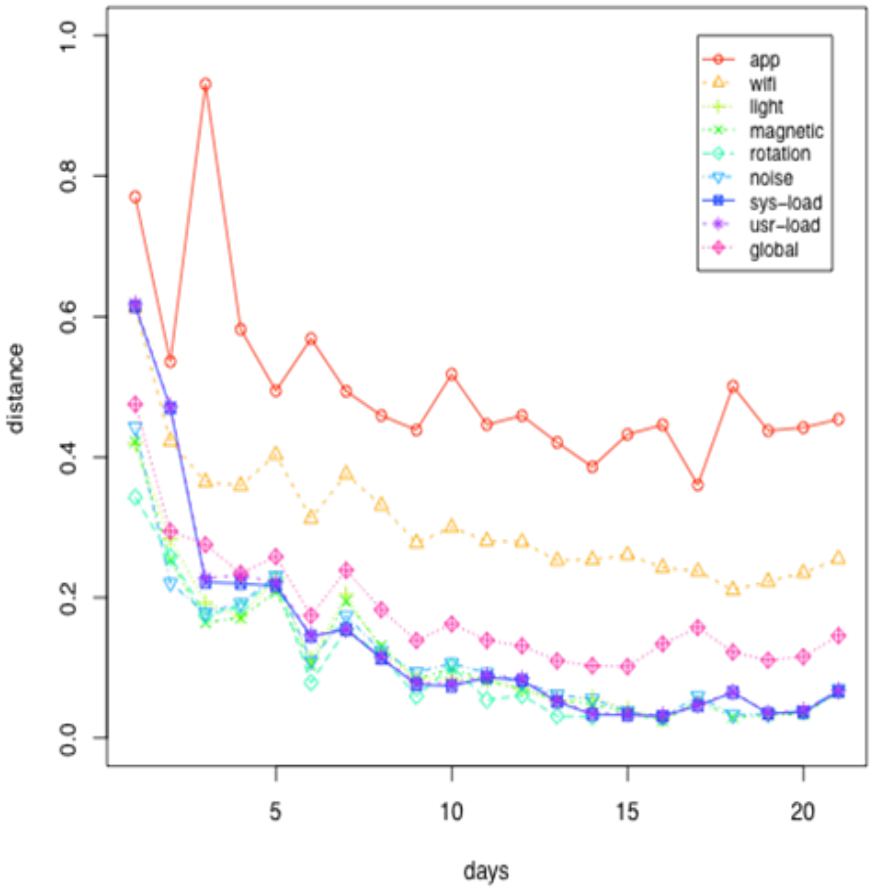
Continuous, Data-Driven Authentication

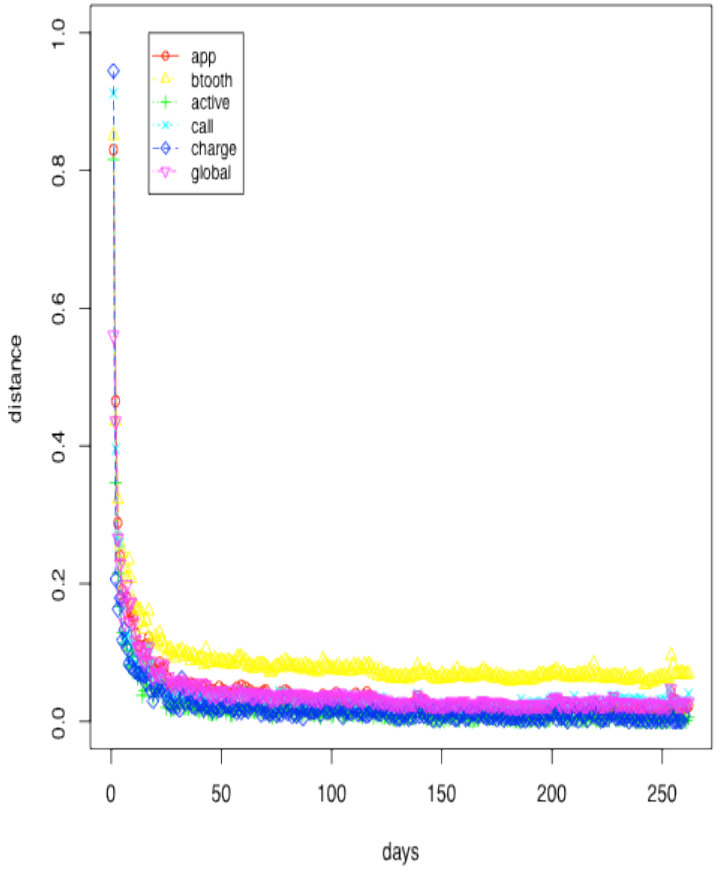


- On mobile devices
- Reduce explicit unlocks
- Multiple sensor input
- More than just location
  - Insider attacks
  - Environment change

See MoST 2014

Time to Train





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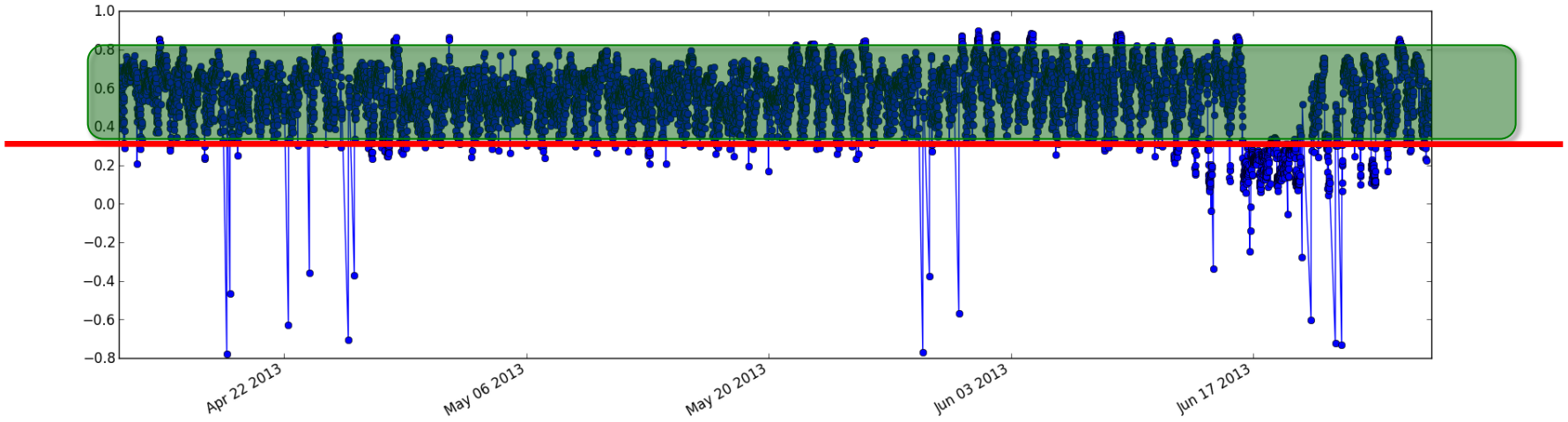
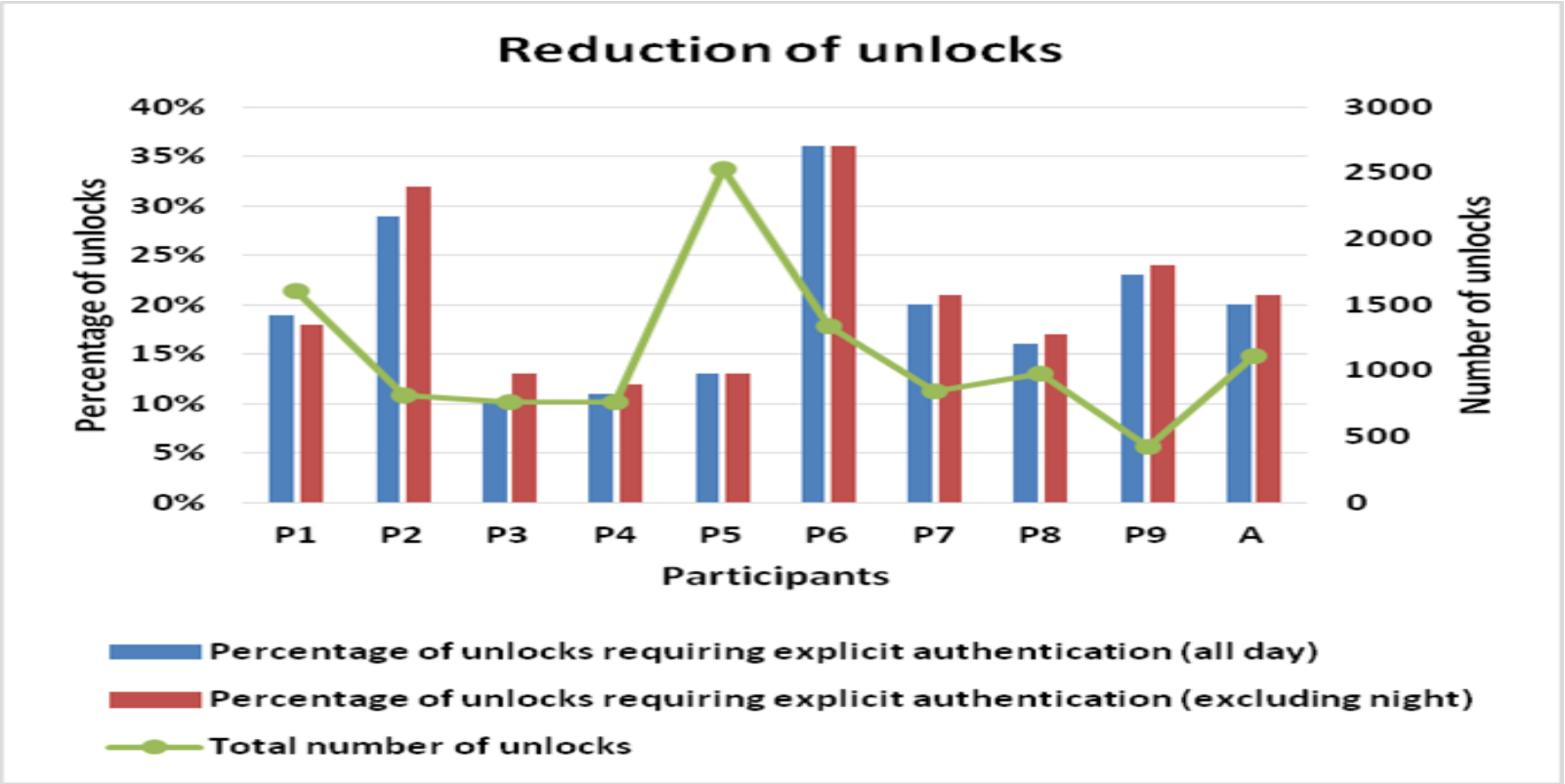
Threshold Setting



Usability



- Current activity: usability study

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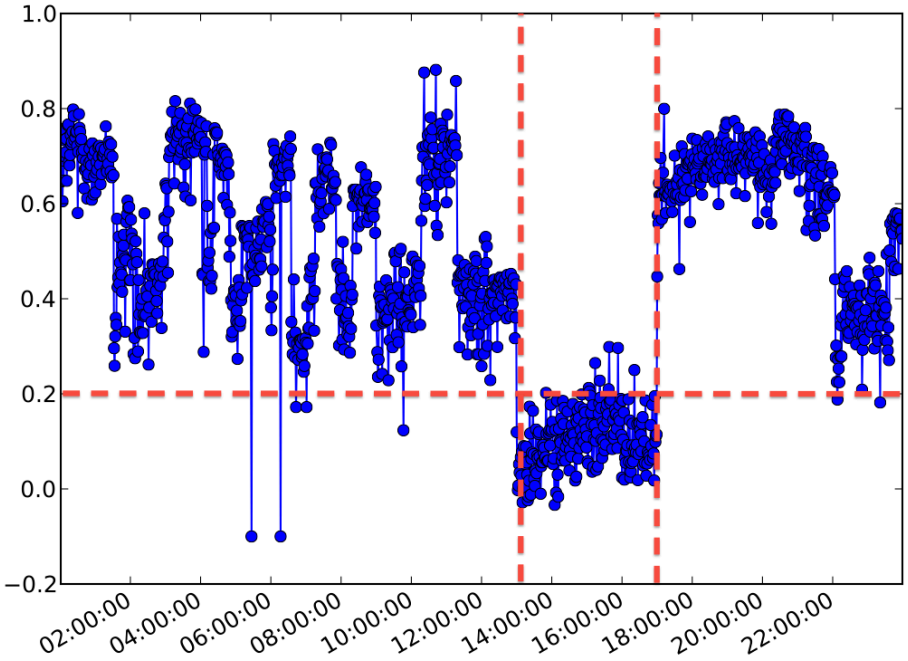
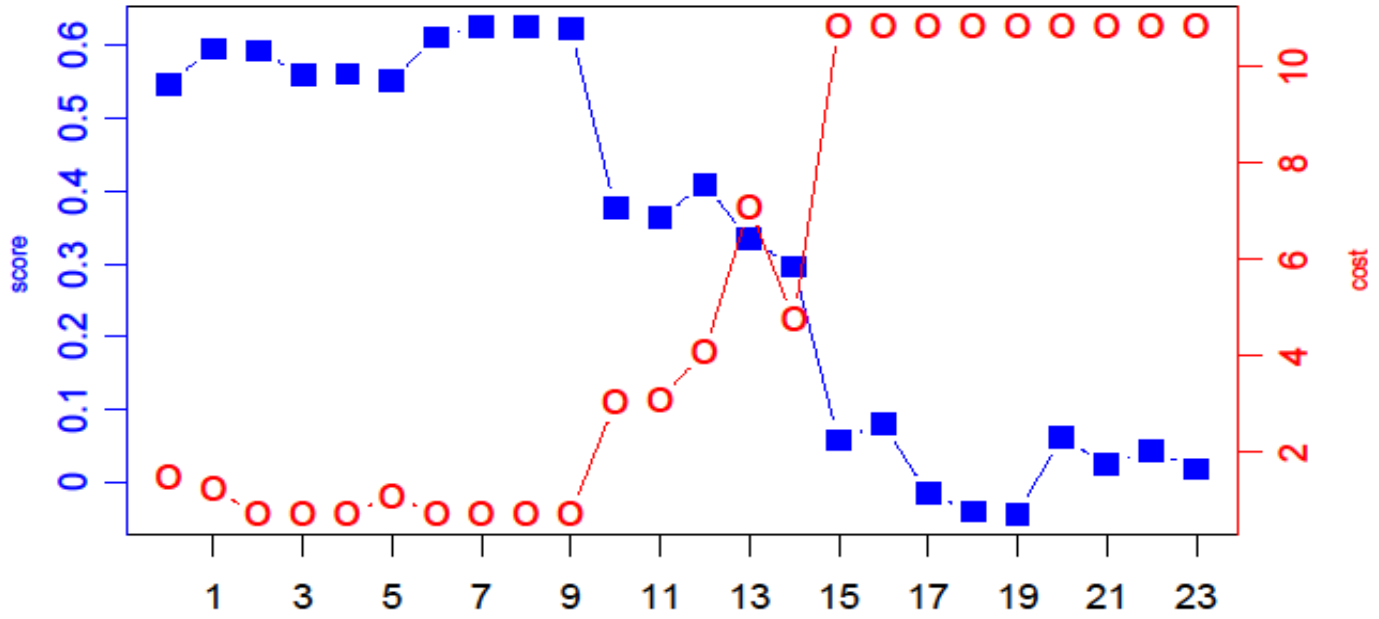
Security

- Initial attacks, based on physical access, and known information



Efficiency

- Adaptive: Based on score changes over time (or other “trigger”)
- Weight and use of sensors in different contexts (time, location)



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Final thoughts

- Authentication frequency
  - Increasing/decreasing frequency options
  - Infrequent account access
- Continuous, data-driven authentication
  - Plausible, but further investigation required
  - Current: Further usability and security studies, resource consumption
  - Will users (who currently use PIN/pattern) like a reduction of the number of explicit unlocks?
  - Will users (who DON'T currently use PIN/pattern) now use a solution with a smaller number of unlocks?
  - Will it be sufficiently secure?
  - Will lower frequency of explicit authentication impact memorability?

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Joint with Gunes Kayacik, Nicholas Micallef,
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