Smartphone Security

- Many mobile users do not take security measures to protect smartphone data
  - 34% in the U.S.
  - 65% in the U.K.
- They perform slide-to-unlock gestures to unlock their devices
- Because they either
  - Find it too much of a hassle
  - Worry that they will forget the password

Motivation

- Develop security techniques that are simple and resemble slide-to-unlock, so that:
  - Reluctant users might be encouraged to start using a security approach
  - Users might move to a more secure approach when they have grown into the habit of using a simple one

Sequential-Slide-to-Unロック

- Divides touchscreen vertically into 3 zones
- Considers each zone as a distinct touch area
- Users select a slide pattern as password
- Patterns are distinguished based on direction and patterns by zones
- 70 unique passwords, when length < 8

Timed-Sequential-Slide-to-Unロック

- Similar to sequential-slide-to-unlock but users can pick 1 out of 3 timeframes / zone using a progress bar i.e. adds time
- It appears when users hold their finger still
- It progresses forward in every 200ms (iterates itself)
- 473,536 unique passwords, when length < 8

Speed & Accuracy

- Significant effect of technique on speed
  - Conventional was the fastest
  - Timed was the slowest
- Significant effect of technique on accuracy
  - Conventional was the most accurate
  - Timed was the most error-prone
- No significant difference between Conventional and sequential

User Feedback

- Sequential perform well compared to slide-to-unlock
- Both perform well compared to digit-lock
- User find the new techniques secure
- Users find sequential easy to use, but divided about timed

Summary