

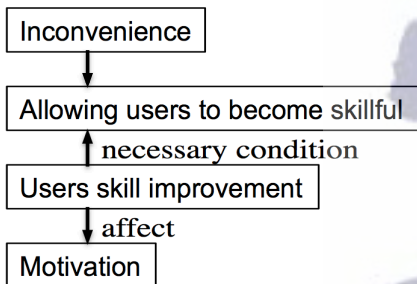
Making Systems Inconvenient to Stimulate Motivation of Competent Users

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Purpose: evaluate user motivation when they use two applications (convenient and inconvenient ones).

Hypothesis:

- inconvenience gives users space to develop their skills for using a system,
- this space props up the motivation of users,
- while adaptive systems reduce the space for such skills improvement,
- the space reduction discourages motivation.



Fuben-eki: further benefits of a kind of inconvenience.

Fuben-eki system design:

- not solely pursue objective efficiency,
- but advocate the subjective benefits of inconvenience.

Experimental Settings:

- Ten students.
- Two groups of five for balancing the order effects
 - Gr1: TU (five days) → FB (five days),
 - Gr2: FB (five days) → TU (five days).
- Measured Data
 - Frequency of system use (represent motivation)
 - etc.
- Measurement of characteristics by questionnaires
 - competence, desire of competence,
 - self determination, desire for self determination.

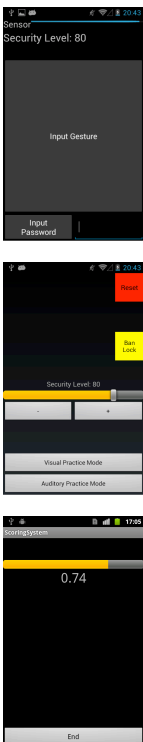
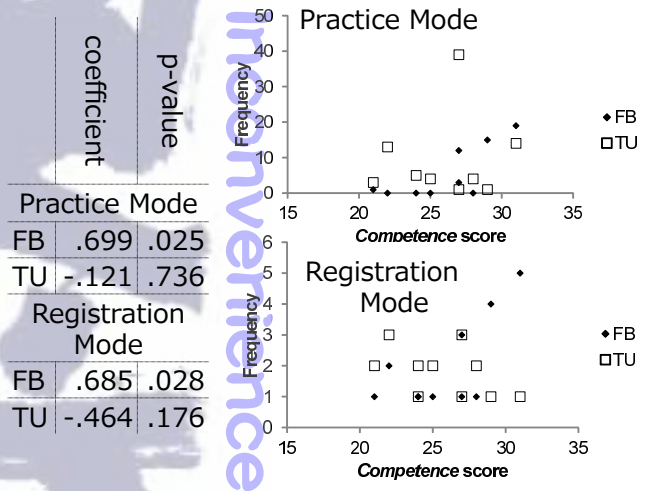
Experimental Systems

- Gesture-based biometric authentication systems.
- Gesture is the key to unlock mobile phones.
- The systems store key-gesture (time-series data of acceleration and angular velocity)

Convenient app. (TU): adapts to users by updating the key-gesture with latest users gesture.

Inconvenient app. (FB) : does not adapt to users but only gives feedback to help them adapt to the system.

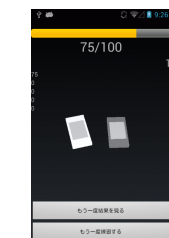
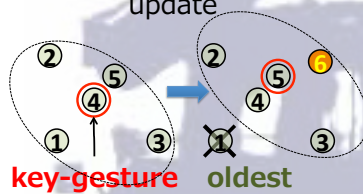
Experimental Results:



Registration Mode (TU, FB) prompts users to register a key-gesture G
Setting Difficulty (TU, FB)
Practice Mode provides opportunity to recall G

FB
visual/audio feedback

TU
key-gesture update



Authentication Mode is unlocked when users recall G
(TU: key-gesture update)

Conclusion:

- competence of users correlates with motivation when they use the inconvenient app. (FB)
- there is no correlation when using the convenient app. (TU)
- inconvenience provides users space for skill improvement
- stimulates the motivation of users under the condition of user competence

