How Do Users Adapt to a Faulty System?

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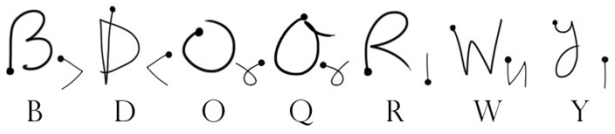
Research Questions

- **Q.** Do users adapt to a faulty system?
- **Q.** Do system errors influence adaptation process?
- **Q.** Is there a threshold for identification as error-prone?
- **Q.** How do users adapt to an error-prone system?



Procedure

- Input letters with pen on tablet
  - » Primary method: ***Graffiti*** (large above)
  - » Alternate method: ***Unistrokes*** (small above)
  - » Suggested usage of alternate if unreliable
- ***$1 Recognizer***
- Injected **10%**, **30%**, **50%** errors
  - » Into ***three out of seven*** random ***Graffiti*** letters
  - » Different letters for each session

Results of the Pilot Studies

Pilot Study 1

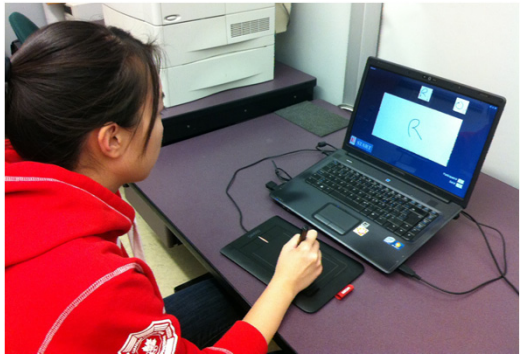
I) No reliable switching behaviour for < 10% errors

Pilot Study 2

II) Error-prone letters not reliably identified
Instead: Global switch to alternate method

III) *Extra care* if error-prone letters were identified

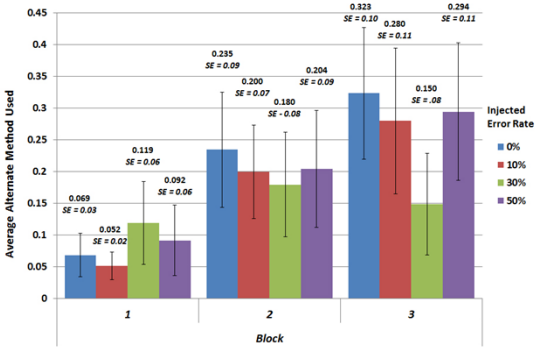
Final Study



Within-subject, 12 participants:
Initial session × ***1*** block × ***280*** letters +
Final session × **3** blocks × ***280*** letters
= ***1120*** letters/user, total ***13440*** letters

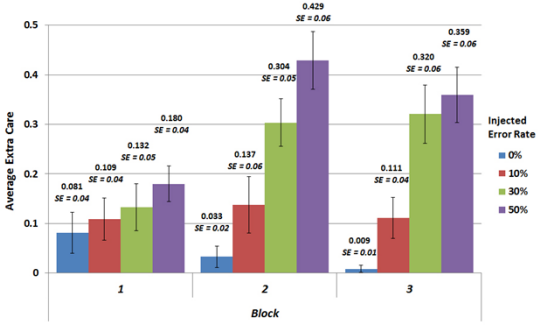
The Usage of Alternate Method

Used ***Unistrokes*** instead of ***Graffiti***



Extra Care

More time than average to draw a letter



For both measures:

- » Significant effect for extra care per letter with more time than average to draw a letter error rates
- » Significant learning effect

Summary

- » Users do gradually adapt to a faulty system
- » Adaptation is proportional to error rate
- » Error rate has to be >10% to be perceived as error-prone
- » Users learn to avoid frequently occurring errors faster