Testing the temporal accuracy of keystroke logging using the sound card

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Published in:
[Publication information missing]

2012

Link to publication

Citation for published version (APA):

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**BACKGROUND**

- Writing research has seen an increased use of keystroke logging
- Keystroke logging programs log the writing process in a continuous and non-obtrusive way
- They enable researchers to collect fine-grained data because they log every keystroke in relation to a timestamp (in milliseconds), which indicates the time that a specific key was used.
- For the researcher interested in for example word-internal processing it’s important to know the degree of precision and accuracy that can be achieved by the program.

**METHOD**

- We propose a method of measuring the accuracy of keystroke timestamps using a recording of the sounds made by key presses.
- Sound cards fit the purpose well since they typically have much better temporal resolution than computer keyboards and they are readily available in most computers
- Key presses produce noise patterns that are easily temporally located in an acoustic waveform.
- The timestamps of the noise patterns can then be compared with the corresponding timestamps reported by the keystroke logging program.
- Specifically, the differences between the two timestamps of each keystroke, provides an estimate of the accuracy of the program.

**RESULTS**

- We find significant differences between the variances of the prototypes and ScriptLog (example: for Java: $F=0.287$, $p<0.001$)
- This implies that a reimplemented version will provide improved timing accuracy
- This method can be implemented as part of any keystroke logging program in order for the user to test the accuracy in his/her own computer environment.

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