Testing the temporal accuracy of keystroke logging using the sound card

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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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