Lehrstuhl für Medieninformatik
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Universität Regensburg

Interaction Technology and Techniques
Assignment 7: Text Input

Summer semester 2017

Submission due: Tuesday, 20. June 2017, 23:55

Hand in in groups of max. two.

Goals of this assignment

- get an overview of the state of the art in pointing / text entry research
- learn more about QT signals and slots
- get some more experience with PyQt and graphical applications
- learn how to design a novel interaction technique
- perform a small experiment

6.1: Get an overview of current research in text entry / pointing

a) Read MacKenzie, I. S., & Soukoreff, R. W. (2002). Text entry for mobile computing: Models and methods, theory and practice. Human-Computer Interaction, 17, 147-198.[1] and provide a short summary (1000-2000 characters) of the paper in your own words, focusing on practically relevant topics.

b) The CHI conference is the most important annual scientific conference in the area of human-computer interaction. Watch the CHI 2017 showreel[2] and find three examples of research on novel interfaces or interaction techniques for text entry or pointing. Find the papers online and provide a short summary of each (max. 5 sentences) in your own words.

Hand in the following files:

mobile-text-entry.txt: a plain text file containing a summary of the MacKenzie & Soukoreff paper.

chi-2017-research.txt: a plain text file containing short summaries of three papers from CHI 2016.

Points

- **1** Files have been submitted and are not empty
- **3** good, interesting summary of the MacKenzie & Soukoreff paper.
- **3** good, concise summaries of the CHI papers

[1] http://www.yorku.ca/mack/hci3.html
[2] https://www.youtube.com/playlist?list=PLqhXYFYmZ-Vd15YJjUde46KRPhyZHogxM

6.2: Design an implement a tool for measuring text entry speed

Implement a tool that allows for measuring and logging typing speed (i.e., a window with an editable textbox).

- download the example file textedit.py and adjust it.
- test data should be logged to stdout (not to a file) in CSV format (see http://www.cse.yorku.ca/~stevenc/tema/ for best practices of logging such data).
- the application should measure how long it takes to write a sentence (delimited at the end with a newline) and each individual word. Find out how to best define beginning/end of word/sentence (and when to start/stop measuring the time).
- you do not need to log typing errors for this assignment
- log appropriate data for the following events (indicate which event you are logging as the first field in the log data):
  - key pressed
  - word typed
  - sentence typed
  - test finished (all sentences typed)
- informally test whether your tool works as expected

Hand in the following file:

text_entry_speed_test.py: a Python/PyQt script implementing a typing speed test.

Points

- **2** Script conforms to PEP8, is well structured and includes comments
- **2** Script works as expected
- **2** Script outputs sensible and valid CSV data

6.3: Design and implement a method for chording input

Extend the tool from assignment 6.2 to enable an efficient input method, either:

- chord input: if the user simultaneously presses multiple keys, they act as a chord and produce a single word (or multiple) - e.g.,. by pressing 'a', 's', and 'd' simultaneously, the word "das" is entered.
- autocompletion: once the user has typed a few letters, an autocompletion hint is shown which the user may accept (hint: have a look at `QCompleter`).
- another potentially efficient input method of your own choosing (please discuss your idea with me).

Hand in the following file:

text_input_technique.py: a Python/PyQt script implementing the aforementioned input method.

Points

- **2** Script conforms to PEP8, is well structured and includes comments
- **2** Sensible selection of input technique and implementation details
- **2** Robust and extensible integration of input technique in code
- **2** Beautiful, intuitive implementation

6.4: Evaluate and document your input method

Conduct a user study comparing the performance of your novel input method to unenhanced keyboard input. Create a short presentation (PDF, ~10 slides) describing your input method and its evaluation. Prepare to present your results in the session on 31.5.2016.

Hand in the following file:

chord_input.pdf: a slide set containing a thorough description of your input method, including design decisions and limitations, technical implementation, and results of your evaluation.

Points

- **3** Good presentation
- **3** Study design includes counter-balancing, many users, training period
- **2** Sensible evaluation including statistical tests, interpretation

Submission

Submit via GRIPS until the deadline

All files should use UTF-8 encoding and Unix line breaks. Python files should use spaces instead of tabs.

Have Fun!