Übung 8 – Mensch-Maschine-Interaktion

Topic: User Study

Experiment: Comparison of Text Input Methods

Is text input using T9 on a phone faster than using an on-screen keyboard and a stylus?

Devices:	Stylus on a PDA or similar (exercises: Nokia 770 internet tablet) T9 on a mobile phone
Compare:	Text input speed Error rate *Hint: Concentrate on text input only - ignore time to setup/boot/initialize the device or to get into the application*
Participants:	Number? Skills? – PDA/tablet users, mobile phone users?
Independent variables:	Input method – 2 levels: Stylus and T9 Text to input – 1 level: Text with about 10 words
Dependent variables:	Time to input a text Number of errors made
Experimental conditions	2 conditions: T9 and Stylus User 1,3,5,7,9 perform T9, then Stylus User 2,4,6,8,10 perform Stylus, then T9 Different texts in first and second run? Particular phone model? Completion time is measured (e.g. stop watch or application) Number of errors/corrections is observed
Hypotheses:	H-1: Input by stylus is quicker than T9 H-2: fewer errors are made using stylus input compared to T9
Null-Hypotheses:	Assumes no effect H0-1: there is no difference in the input speed between stylus and T9 H0-2: there is no difference in the number of errors made using stylus input compared to T9
Experimental Method:	Within groups Randomized order of conditions
Fairness:	Same conditions and procedure (e.g. light condition, interruptions, noise) Specify procedure for exceptions (e.g. someone does not complete the test) No bias
Participants' Consent:	?
Further issues:	Ethical issues Privacy

The collected data can be put in a table like this:

User	Order	Time Condition 1	Time Condition 2	#Errors Condition 1	#Errors Condition 2
01	c1, then c2	…	…	…	…
02	c2, then c1	…			
03	c1, then c2	…			
…	…				

Part 1: Run the Experiment Described Above

(The experiment is conducted during the exercises)

Run the user study according to the specification and plan you made.
- Measure variables
- Document the result
- Observe

Give a short summary of the results, including:
- Raw data from the experiment (use a spreadsheet such as OpenOffice Calc)
- Important observations
- List of problems encountered

Part 2: Analyse the Results

(Per-group homework, 1 week)

Perform a statistical analysis of the data gathered in the experiment. In particular, evaluate if one of the methods is significantly faster than the other.
- Analyse the results
- Perform a statistical test (see lecture of February 2nd)
- Summarise your overall results

Part 3: Specify a Different Experiment

(Per-group homework, 1 week)

Give the specification of your experiment. You can complete the example above or define any other experiment of your choice (e.g. graffiti vs. QWERTY keyboard, etc.). There is no need to carry out the experiment. The specification should contain:
- Goal
- Hypotheses, Null-Hypotheses
- Participants, who, how many
- Independent variables
- Dependent variables (how to measure)
- Exception handling
- Experimental setup
- Consent form

Submission:

- Submission of the results from parts 2 and 3 is by email to mmi1@hcilab.org
  Please use a PDF attachment named uebung8-gruppeN.pdf (N is your group number).
  The report must be written in English.
- Deadline for submission: **Tuesday, February 7th 2006, 8 a.m.**