Übung 3 – Mensch-Maschine-Interaktion

Topic: GOMS/KLM

Perform the following tasks and create a report which describes your approach and results.

Part 1: An Alternative Currency Converter

(Per-group homework, 2 weeks)

In the lecture, we performed a time estimation using KLM for a currency converter. Propose an alternative layout/design for a converter which offers several different ways to use it (e.g. mouse, keyboard). Do a GOMS description for at least two methods of doing a conversion. Do an estimate on the usage time by using KLM.
Compare the time estimate to actual usage time (at least 3 test users, each with 2 runs). The GUI of the converter can be implemented using a technology of your choice, it does not need to be functional.

Part 2: Predicting Usage Time For Mobile Phones

(Per-group homework, 2 weeks)

a)
Create a KLM for estimating interaction with a mobile phone in the real world.
Consider the following basic interactions:
  – Key presses of special keys on the phone
  – Key presses of number keys on the phone
  – Text input using multi-tap (not T9, only letters a-z, no capitals) – assume that the input mode of the phone may be set by software for letters and numbers.
  – Homing (holding phone to ear vs. viewing the display)
Advanced interactions:
  – taking a picture of something/someone
  – taking a picture of a marker (left)
  – reading an RFID/NFC tag (right)
Are further operators required or useful?

Design and perform experiments to measure the basic times needed for the operators.
You may use any phone of you own (write down the model) or the phones
which are available during the exercises sessions. Equipment for advanced interaction is available from Enrico Rukzio <enrico.rukzio@ifi.lmu.de>, 089/2180-4664.
In order to measure the time between actions accurately, use a method with appropriate resolution, e.g. recording the actions on video (webcam, digital camera).

b)
Specify the sequence for the following tasks and calculate the expected duration
  – Write an SMS to 0176/21248696 with the content "sorry, will be 10 minutes late"
  – Write an MMS with a picture and the content "looks great – what do you think?" to 0176/21248696
  – Take a picture and store it in a folder

Next, compare your numbers to actual usage numbers obtained from tests (at least 2 test users, each with 3 runs). Do the expected and actual numbers correlate? (Don't change the numbers to fit your measurements.)

c) (optional)
Write a tool which is given a sequence of button presses, letters and numbers and which calculates the execution time.

d) (optional)
With the Nokia N90, the user can select functions by "bringing the phone into a certain shape" - the different parts of the phone can be moved in various ways. How can this be modelled? What are the basic operators?
One N90 is available from Enrico Rukzio
<enrico.rukzio@ifi.lmu.de>.

Submission:

- Submission of the report is by email to mmi1@hcilab.org
  Please use a PDF attachment named uebung3-gruppeN.pdf (N is your group number). The report must be written in English.
- The report should contain details about the mobile phone that was used, the measured data and the approach that was used.
- Possibility for discussion of implementation/experiments: Exercises on November 22th/23th/25th.
- Deadline for submission: **Tuesday, November 29th 2005, 8 a.m.**
- Presentation of results: Exercises on November 29th/30th, December 2nd. Each group member must be able to explain her/his group's solution in the exercises session.