Seminar 1: Exploring usability design options

Prior to this week's seminar, read the study published Reynaga et al. (2015) (see Unit 2 reading list).

Then reflect on:

- The data collection techniques used.
- The alternative data collection techniques that could be employed.
- The security technology being researched. → CAPTCHAS Usability on Smartphones
- Any alternative approaches that could be applied. → CAPTCHA Usage by visually and/or physically impaired. Learning progress in dealing with CAPTCHA tasks.

We will review the study during the seminar, as well as the assessment guidance.

. The goals of the study were to assess the usability of the captcha schemes on smartphones and identify the users' preferences and opinions of the various schemes.

We chose a controlled lab study because besides collecting quantitative performance data, it gave us the opportunity to collect participants' impromptu reactions and comments, and allowed us to interview participants about their experience.

Other technique:
→ Voluntary anonymous questionnaire.
→ Real world case investigation.

Sessions lasted approximately 45 minutes. Participants were offered a $15 honorarium for their time. This research has been approved by our institution's Research Ethics Board. Participants used their own device for the study. This enabled us to cover a range of scenarios and to ensure that any problems uncovered were not due to unfamiliarity with the device itself. We had a smartphone available, but no participant chose to use it. In the real world, users have a plethora of browsers and smartphone models. Several implementation issues were uncovered by allowing participants to use their own phones.

The 28 participants (16 females, 12 males, mean age 35.17, SD 10) were graduate students (5), undergraduate students (6), professionals (9), research assistants (4) and faculty members (4). None had participated in prior captcha studies.

We collected performance data and subjective data. Performance was measured by noting the overall time, number of successes, refresh/skips (as explained later), and errors while answering the challenges. The participants also responded to a demographics questionnaire and a satisfaction survey. The questionnaires were implemented using Limesurvey.2

Three methods were used to collect data: **logs, question-naires and observations.** Unless otherwise indicated in Table I each system was instrumented to log users' interactions with the system. We recorded the overall time (receiving, answering submitting, and getting the reply) for each challenge. We also tracked the frequency counts for success, refresh/skip, help button clicks, and errors while answering the challenges. For NuCaptcha and Picatcha, this information was manually extracted from the videos.

Table II summarizes the performance outcomes for the evaluated schemes. Success, error and skips are presented as percentages. The time and standard deviation are expressed in seconds.3