



Tutorial: Effective User Survey Design and Data Analysis (T03)

Monday, September 12, 2016 (Full-day)

<http://re16.org/pages/conference/tutorials/#T03>

Software engineers find designing user surveys not as simple as compiling a list of questions that seem reasonable to the investigator. Survey design should leverage the wealth of theory that informs whether a proposed survey measures what is claimed to be measured. For example, engineering researchers studying methods often default to measuring the time of completion or the number of tasks achieved to evaluate a solution. Alternatively, the engineering problems are rich with human-subject-relevant phenomena that can advance our knowledge in requirements engineering. Furthermore, researchers in psychology and the social sciences have discovered foundational theories that can be used as guidelines to create experiments to access that knowledge.

In this tutorial, we introduce the audience to relevant social science theories and show how they can be applied in survey design. Students will learn this application using a sample survey in class where they apply what they have learned. We aim to teach the community about the challenges in user survey design and how to address these challenges and reduce bias. We also explain the different scales and metrics in surveys, and we discuss theories from the psychometrics field behind choosing scales for the construct of interest in a survey. We base our survey design techniques on well-known methods in the social science community aimed at increasing conclusion reliability. In addition, the tutorial will explain analysis techniques for survey data. We will explain different types of statistical tests their differences, and how we choose the appropriate test. We will explore topics like: sampling, test conditions, assumptions, and statistical power. We will also explain how to present findings from user surveys in research papers and how to report the statistics.



Hanan Hibshi is a Ph.D. candidate in the Societal Computing program at Carnegie Mellon University. Hanan's research area includes: usable security, security requirements and expert's decision-making. Hanan's research involves using grounded theory and mixed-methods user experiments to extract rules for use in intelligent systems. Hanan received her MS in Information Security Technology and Management from the Information Networking Institute at Carnegie Mellon University, and the BS in Computer Science from King Abdul-Aziz University in Jeddah, Saudi Arabia.



Travis D. Breaux is an Assistant Professor of Computer Science in the School of Computer Science at Carnegie Mellon University. He received the Ph.D. in Computer Science from North Carolina State University in May of 2009. Dr. Breaux's research includes mixed-methods design, including grounded theory to discover ontologies, formalisms for expressing problems, and cognitive models that explain how humans perform analysis. Dr. Breaux is a 2015 NSF CAREER award recipient for his privacy and security requirements research, and he is a regular member of the IFIP Working Group 2.9 on Requirements Engineering.