Designing and Evaluating Mobile Interaction: Challenges and Trends
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Designing and Evaluating Mobile Interaction: Challenges and Trends

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Abstract

Mobile technology has been rapidly gaining ground and has become intrinsic to our daily lives. As its importance within society continues to grow, features, functionalities and usage opportunities accompany such growth, turning mobile devices into essential tools. Faced with the role that mobile interactive technology has assumed, it is vital that ease of use also reaches new levels, attenuating the growing complexity within the critical status that they represent. Accordingly, mobile usability evaluation needs to re-invent itself to keep pace with this new phenomenon. This article reviews the current approaches and recent advances in the design and evaluation of mobile interaction and mobile user interfaces, addressing the challenges, the most significant results and the upcoming research directions.
# Contents

1 Introduction  

2 Understanding the Real World  

2.1 Context in HCI  
2.2 The Mobile Dynamics  
2.3 Understanding Mobile Contexts  
2.4 Recreating and Focusing Contexts  
2.5 Section Overview  

3 Prototyping the Concepts  

3.1 The Use of Prototypes in HCI  
3.2 Mobile Requirements  
3.3 Low-fi Prototypes  
3.4 Mixed and High-Fidelity Prototypes  
3.5 Section Overview  

4 Evaluating the Results  

4.1 Usability Evaluation  
4.2 The Challenge of Mobile Evaluation  
4.3 Techniques for Data Collection  
4.4 Technology-aided Mobile Evaluation  
4.5 Section Overview  

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Our lives and society are rapidly gravitating towards a world in which mobile devices are taken for granted. These are no longer accessory but become natural extensions to our bodies. Their use has become quasi-permanent, following and supporting us in most of our activities and affecting the way we interact, share, and communicate with others. Additionally, they are growing in diversity, and complexity, featuring new interaction paradigms, modalities, shapes, and purposes (e.g., GPS, Portable Media Players, Gaming consoles, Smart Phones, E-book Readers). Together with the evolution of the available hardware, software has also evolved greatly and users are becoming ever more demanding of user interfaces (UIs) that provide both functionality and pleasant user experiences.

The fact that mobile devices are used anywhere and anytime also brought new conditions of use, frequently in austere settings. This pervasiveness of use combined with enthrallment of the devices into our lives and the expectations’ growth brings usability and user experience to the front line. As a consequence it is paramount that design methods accompany this evolution, in order to aid designers during this demanding creation process.
Introduction

Taking into account the strong differentiating factors that characterize mobile devices from traditional personal computing (e.g., desktop PCs), such as their ubiquitous use, usual small size, and mixed interaction modalities, designers are faced with additional challenges. In particular, two design stages show greater difficulties and are most emblematic of the new challenges faced by designers: the prototyping and evaluation of mobile design concepts and mobile interaction.

In face of these new found adversities, research has been gradually responding to these challenges. Several works have been emerging with different approaches. Some depart from traditional evaluation techniques. Others essay rupturing proposals and offer new means to capture and assess mobile usage experience. In general, most rely on prototype design and evaluation and on the acceptance of context as a fundamental cornerstone on the whole process.

This monograph presents an overview of the current state-of-the-art, addressing recent and emerging work that focuses several issues within the two stages of the design process. In particular, it describes research focusing on

(1) the understanding of context and scenarios to drive interaction design and evaluation. With the need to design and test mobile interaction within realistic environments, comes the need to select proper conditions, scenarios, and settings in which to focus on. Some research has been addressing this issue, providing new findings on how to frame concerns and characterize the settings and variables that define and affect mobile interaction;

(2) the updated prototyping techniques that field work requires, which are crucial in order to properly support trials at the very initial steps of conceptualization and design, also offering means to propel user engagement throughout the design process;

(3) the new evaluation techniques that mobile interaction design entails, which can be used in new scenarios and environments, where designers are, many times, required to be as mobile as
their designs and end users, conceiving new strategies and evaluation approaches for ubiquitous use.

Based on these research advances, future directions and trends will be mentioned and suggestions on additional research paths will also be drawn.
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