

Wordless, Voiceless User Assistance to Enable a Linguistically Diverse Population Utilize Public Services

Aditya Manohar
University of Washington
Seattle, Washington, USA
aditya.manohar@gmail.com
+1 (424) 235-3844

David K. Farkas
University of Washington
Seattle, Washington, USA
farkas@uw.edu
+1 (206) 365-8537

ABSTRACT

India has 22 recognized languages and many citizens understand only their local language, greatly hindering their use of automated systems such as web applications for applying for a passport and physical devices such as ATMs and kiosks for accessing train schedules and purchasing tickets. Early design work is underway for wordless and voiceless user assistance (WVUA) for these kinds of automated systems. This WVUA employs low-fidelity animations, industrial-quality videos, and simple static graphics. Communication without written text or spoken discourse is challenging, but we hope to draw useful design ideas from the world of theater and mime performance as well as information graphics. In contrast to other work, our focus is generalizability. Recognizing that procedural discourse expresses a limited number of system states, similar actions to change these states, and conditions and options that govern these actions, we seek to develop a flexible visual language that can be applied to many systems.

Author Keywords

Illiteracy; developing countries; digital interfaces; public services

ACM Classification Keywords

H.5.2 [Information Interfaces and Presentation]: User Interfaces – Graphical user interfaces, training, help, and documentation; K.4.m [Computers and Society]: Miscellaneous

General Terms

Human Factors; Design; Documentation

INTRODUCTION

India is a vast country with a population of 1.2 billion people and growing, 22 recognized spoken languages, and a large number of spoken dialects. Increasingly automated systems have become widely available in India. Some of these are web-based such as the web application for applying for a passport. Others are physical devices such as

ATMs, bill-paying machines, and kiosks for accessing train schedules and purchasing tickets.

However, many citizens understand and speak only their local language and dialect, greatly hindering their ability to use automated systems that could make their lives easier and more successful. Ideally, the user interfaces of all these systems along with user assistance (help) content would be made available in a language every user understands—but with the multiplicity of languages and dialects, such localization is far from feasible.

APPROACH

Medhi, Sagar, and Toyama [3], developed an interface for a particular group of illiterate people using static graphics and audio in their language. In contrast, our approach is to create a wordless, voiceless user assistance (WVUA) that would cross linguistic barriers. This assistance takes the form of low-fidelity animations, industrial-quality videos, and simple static graphics. The videos will typically depict users of the service and a guide who shows how to use the service. Following previous researchers and developers of systems for illiterate users in India [2, 3], we employ numbers.

With the guidance of WVUA, users who do not know the language(s) of an automated system's UI can perform at least basic tasks. Communication without written text or spoken discourse is challenging, but we hope to draw highly useful design ideas from the world of theater and mime performance as well as information graphics.

In developing their system, Medhi, Sagar, and Toyama engaged in reiterative ethnographic design. Their focus was always on their target users. While a focus on users is always essential in system design, our emphasis is generalizability: we seek to develop a flexible visual language that can be applied to many systems. Amid the vast differences among procedures, there is a strong underlying commonality: Procedural discourse is always comprised of an initial state, interim states, possible unwanted states reflecting conditions that must be addressed, a goal state (with possible variations), actions that change these states, and feedback from these actions [1]. Consequently, it should be possible to derive a visual syntax for procedural discourse that can be adapted to individual automated systems. Particular goal states will differ (making a train reservation vs. depositing money), but even so, there are sufficient commonalities across public services to suggest that we can devise a set of visual-

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communication techniques that can be adapted from system to system.

Potentially, the visual language will be codified into a design kit—a specification for any organization seeking to develop wordless, voiceless user assistance for their particular automated system. A long-term design goal is a design and production kit that would enable the efficient generation of data-driven animated characters rather than (or in conjunction with) animations based on drawn-graphics.

DEPLOYMENT

In a website, the user assistance (UA) would be presented in a typical video player (such as the YouTube player). In an automated teller machine (ATM) or kiosk, a monitor with touch controls would play the UA content. Contemporary UA often employs embedded help, where the UA content appears next to the user interface (UI) control that needs to be explained. Embedded UA content, however, would create large barriers to widespread implementation because the content would have to be made available on multiple locations on the UI. By designing for a single player in a website and for a single monitor in a physical device, implementation across diverse automated system is more likely (especially because many public-

access devices already have touch-control monitors built into them).

CURRENT FOCUS

This is a fledgling project. Our initial efforts have been to identify the components of the visual language, to experiment with simple animations that express the components of this visual language, and to experiment with visual representations of some typical goal states to confirm our conviction that this is feasible.

CONCLUSION

Providing a means for illiterate individuals to access computer systems is an important accessibility goal. We hope that our work will lend itself to the development of interfaces that achieve this goal.

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