Abstract

Today’s complex appliances are plagued by difficult-to-use and inconsistent user interfaces. Some of these problems can be addressed by moving appliance user interfaces from the appliance to a mobile device, such as a PDA or mobile phone. I have conducted studies showing that users are twice as fast and make half as many errors when controlling appliances through a handheld as compared to using the manufacturers’ interfaces. I have built a system for automatically generating user interfaces that allow users to control their appliances. My thesis addresses some of the issues that arise when automatically building appliance interfaces for end-users.

Domain-Specific Design Conventions

A common problem for automatic generators has been that their designs do not conform to domain-specific design conventions that users are accustomed to.

Interface Consistency

The PUC system has a unique opportunity to ensure internal and external consistency among all interfaces that a user generates, because each PUC user has their own personal device. Interfaces can be made internally consistent using the standard toolkit on each device, like our PocketPC interface generator does. Interfaces can also be made externally consistent. E.g., a newly generated interface for a VCR in the conference center should look and feel like the interface for my VCR at home. Creating externally consistent interfaces can be broken into two problems:

- **Consistency Problem**: How do we make user interfaces consistent for similar appliances?
- **Similarity Problem**: How can we determine that two appliances are similar from their specifications?

Improving Interfaces with the PUC

Generates an interface that aggregates all functions into one set of screens organized by screen instead of appliance. Automatically create macros for frequently used functions.

Example renderings of the media-controls Smart Template

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