

Personalisation and Multimodality

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“Our interactive systems have to be accessible, usable and engaging”

D. Benyon [\[2\]](#)

The aim of this article is to introduce the concept of personalisation and why we need to extend it to support future interactions. Multimodality is used as a bridging concept between naturalistic behavior and engagement. Ultimately the research goal is to understand the principles underlying the design of interactive systems that provide individual user experience through multimodal interactions.

Personalisation

Personalisation had its peak in the late 1990s and is rooted in the rapid growth of the World Wide Web which has become an integral part of business and everyday life. “Personalisation”, prior to the era of ubiquitous computing, was indented to provide custom web contents based on the interests of individual. The personalisation of services can be considered in two different ways: *Personalisation* and *Customisation*.

Customisation requires users to perform some initial tasks to have their preferences profiled. While here we discuss about *Personalisation*, we implicitly confer a means of reducing explicit input or providing machine learning of user interaction.

A personalised service provides suggestion based on either implicit data such as items purchased or page viewed or users’ explicit input such as preferences.

In the age of ubiquitous computing, when either one user interacts with one device when he is on the move or when many users share one device, not only the information about available services and user preferences has to be recognized, but also the available technologies and their specifications have to be acknowledged by the system. Then, the content will be delivered to the users differently based on the characteristics of their devices. This is called personalised interface.

When dealing with a mixture of medias and technologies in different contexts, the concept of personalisation should be extended to make interaction between individuals and their programmable devices more natural, intuitive and engaging. Multimodality can be used as a mechanism to achieve this design goal.

Multimodality

A *modality* is a path of communication, in this case “sensory channel”, employed by the user interface to carry input and output. According to most widely accepted explanation, there are five human senses and they are sight, hearing, touch, smell, taste. The user interface may offer several input and output modalities, allowing the user to choose

which ones to use for which specific kind of interaction. If in this case more than one path of communication can be deployed then such interaction becomes multimodal. An example of such multimodality can be the combination of facial, postural, gestural, hand tension activities, with vocal expression, language and the choice of words.

Recent HCI research emphasises multi-sensory interaction through the concept of multimodalities. However, Aziz and Nicholas [1] reported that 70% of sensory perception researches are of vision sensory, another 20% for audio channel, 5% and 4% on olfaction (smell) and gustation (taste) accordingly, only 1% is on somatic (touch/haptic) sense. This contradicts the fact that most sensory receptors lie on human skin and haptic interaction can provide the sense of presence and make interaction more engaging. Therefore, all interaction designers are challenged to explore haptic in order to extend its communicative capacity.

The Future of Interaction Design for Personalisation

In the past, many systems have been designed by programmers and computer-savvy engineers who assumed that users need the same things. Frequently, users discovered most usability problems after purchase. These days, people learn how to be critical about product design, “choose” to make their statements and express their ownership because of:

- available information
- returning policy
- massive choices and
- global competition.

Based on the study by Ho [3], it found that users prefer personalised services to generalised ones and are likely to switch to a provider who offers the former. These user groups exercise total control over their collections, assume different identities in cyberspace. It's all about controlling one's space, time, content, communications, i.e. one's universe [6]. An obvious example of this “control freaks idea” lies within hundreds of millions of mobile phone users worldwide that express themselves through different handset models and customised ring tones and covers.

It is our mission to understand their needs and limitations at personal level rather than generalize their requirements. Consequently, we, as practitioners of HCI, have to take all these concerns when we design. That is, we need to put people and their needs in the centre of design process. This aspect is seen as fundamental to design systems allowing the users to do their own things in their own ways. Let them be designers.

Considering this, not only the tailoring of information should be addressed but also the tailoring of interactions should be focused. In order to well-facilitate these dynamic interactions, multimodality can offer more choices for interaction. The most apparent reason is that we can deploy its variation to appropriately help, support and extend the

way users personally communicate and perform activities.

However, to provide effective multimodality, we have to considerably and carefully design the interaction process. A pilot study on mobile computing devices [4] suggested that enhancing the buttons on computers with sound can significantly increase their usability. Nevertheless, Verrillo [5] found that heavy use of channels often reduces the usability of a user interface, as the user must expend effort to remember current states, and switch between them as necessary. This contradiction challenges interaction designers to resolve and find a balance of an appropriate usage of multimodality.

Therefore, we need an enhanced paradigm of interaction, and also a proper understanding of paradigm we already have. Further techniques to use them effectively and in a better way for their enhancement should be developed. Finally, a better understanding of where the different paradigms are best applied and how and when to mix them is necessary.

The ultimate goal is to understand the principles underlying the design of interactive systems that provide individual user experience through multimodal interactions and to design them in a way so that they are enjoyable and useful, and thereby enhance the lives of the people using them.

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