eFridge: Everyday Internet Appliance

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Abstract

This project involves embedding intelligence and the internet into a refrigerator. This will have four outcomes. The first is to do with technical issues of the development itself. Second, this will provide a platform for further research into human systems. Third, this development will lead to other forms of embedded processing. Last, it will make a really cool promotion item.

Introduction

The short story is we plan to put the internet in a refrigerator. Consumer electronics is the field of computer enabling everyday objects. It is becoming possible through the convergence of a number of strands of technology.

Imagine you are driving home. Your cell-phone rings, it's the 'fridge asking you to pick up some milk. Or you are in the supermarket wondering what to have for tea, you can check what's in the fridge. The supermarket could restock the fridge for you based on what the fridge says you've used and what your family normally uses, supplemented by a calendar of upcoming holidays. Sun Microsystems argues "This is not the Jetsons - it's today".

Drink vending machines have been enabled in this way for a long time. They, however, operate in a very controlled environment. The fridge is the perfect example of a messy environment. Along with the technical development of enabling the fridge is the human systems work of making it useful (Nielson 1993, Norman 1989). Both Frigidaire and Sun are showing concept fridges at trade shows (eg Consumer Electronics http://www.ces.org) with screens and barcode scanners. However, as Sullivan (2000) writes, "the humans are still needed...this means it can't sense when you're running low on milk or beer and order some for you". Part of our research is to overcome these difficulties. We will borrow process control methods from manufacturing such as reorder quantities, but 'everyday objects' are messy systems, the family fridge no exception. We will investigate options for process control and vision.

Kaku (1997), argues that the days of the computer as we know it are numbered:

> "In the next 20 years, because of Moore's law, the PC will be replaced by millions of tiny intelligent systems embedded invisibly in our environment, in our clothes, jewelry, glasses, cars, furniture, and walls. They will be able to recognize our voice commands and carry out simple wishes. Microchips will cost less than a penny, less than the cost of scrap paper, so companies which do not put chips in all their products will be at a severe disadvantage. Eventually, microchips will be as common as writing and electricity — invisible yet ubiquitous" (p23).

The next wave of advancing technology is the embedding of computing in everyday objects. The time is right for this research. A number of technologies are converging which makes this possible. These are:

- Cellular and communication devices (at both appliance and mobile user's end)
- Sensing technology
- Embedded technologies including vision and speech
- Infrastructure (eg companies such as Woolworths with information and product systems capable of integration with consumer electronics)

This work is being undertaken as part of the Industrial IT project (Mann *et al.* 2001).

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Acknowledgements

The assistance of Selectrix in Dunedin is much appreciated. The measurement work is being undertaken by Rob Sherriff, Louise Sherriff, Owen Forscutt and Spencer Ho with the assistance of Russel Jordan and John Cleary. The advice of Terry Thomas is also appreciated. Funding for this project comes from Otago Polytechnic Research and Development Committee.