‘Entangled Things’ to Ameliorate Older Age Isolation

[Ageing and Digital Technologies]

Overview

It is perhaps inevitable that many older people are at increased risk of becoming socially isolated. This can stem from reduced access to regular work-based social contact, the reduction in size of social circles due to death, infirmity and the reduced mobility that often comes with age (Wenger et al 1996). Increased mobility of industrialised nations (Kaufmann and Viry 2015) has led to a fragmentation, and now, more than at any point in history, many families live at a substantial distance from their older relatives (Chambers 2012). These new domestic arrangements have an impact on the extent to which social support can or could be delivered through and by extended families, further impacting on social isolation amongst older populations.

Research in Human Computer Interaction and Ubiquitous Computing has been called upon to address this issue. Inevitably, there have been attempts to explore the digital networking of domestic spaces and people, to have living environments augmented such that older aged inhabitants might be tracked and monitored. Whilst well intentioned, and of some value in specific clinical populations (for example in determining unusual patterns of behaviour in Alzheimer’s patients (Dahl and Holbo 2012)), there is inevitably a concern regarding privacy and intrusion. Research that has discussed pervasive video connections amongst families has previously raised similar issues (Harper 2011). Some approaches to this problem space have taken a lateral approach, fruitfully exploring the development of technologies to support intergenerational gameplay (Vetere et al 2009), thereby fostering connection and combatting isolation. However, this only makes sense where such relationships exist, and in many respects does little to promote local interaction.

The emergent Internet of Things (IoT), raises a new set of design possibilities that may contribute a different perspective to research concerns addressing isolation in older age populations. IoT technologies provide computational enhancements to everyday artefacts and devices, allowing them to record and share data about our interactions with and around them. Using this basic premise as a starting point, there is a rich potential to explore a design space around the creation of ‘entangled things’ – tangible artefacts and objects, in domestic spaces, that are computationally tethered to other objects and devices in other domestic spaces. Using this conceit we may be able to design a suite of new interactive devices, which would allow users to discretely share aspects of their daily activity and to have artefacts in other’s environments react and actuate in response to this data, subtly raising awareness of activity or even providing channels for simple phatic communication. Rather than just providing links
between family members there may be even more opportunity to provide such links for peer groups to foster new forms of connection and self-reliance amongst localized communities of older technology users. This PhD will therefore address the research question: What are the opportunities and impacts of using IoT networked tangible artefacts to support connections between peer groups of older aged populations to ameliorate the effects of isolation?

**Methodology**

This PhD will adopt a participatory design methodology. Initial phases of the research will utilise interviews and focus groups with older age participants to develop a deeper understanding of the issues of isolation. Cultural probes will be deployed to foster empathy and develop trusted connections between the researcher and participant groups; and to deliver design inspiration. The participatory design process will then use a series of participant workshops to design and develop some concept devices, instantiations of ‘entangled things’. A minimum of two concept devices will be developed, to be deployed with participants for an extended period of time (six months). Deployments (field trials) will be evaluated through a series of interviews and the completion of user-directed response logging (for example use logs and diaries). Interviews in early phases and in evaluation of deployments will be analysed using Interpretative Phenomenological Analysis (IPA).

**Timeline**

| Year 1 |  
| M1-M2 | ‘Design for the Lab’  
| M1-M10 | Research methods module; Literature Review; Recruitment; Interview study  
| M6-M10 | Cultural probe development/deployment  
| M11-M12 | ACM CHI paper submission  
| Year 2 (75% Newcastle; 25% Singapore) |  
| M13-M22 | Participatory design workshops  
| M15-M22 | Technology probe development  
| M19 | ACM CHI Workshop (Attend/Organise)  
| M23-M24 | ACM CHI paper submission  
| Year 3 (75% Newcastle; 25% Singapore) |  
| M25-M30 | Technology Probe deployment 1  
| M26-M31 | Technology Probe deployment 2  
| M31 | ACM CHI Workshop (organise)  
| M32-M35 | Deployment data analysis  
| M35-M36 | ACM CHI paper.  
| Year 4 |  
| M37-M39 | Internship (Industrial Collaborator)  
| M40-M48 | Thesis write-up; Journal paper.  

**Training & Skills**

All students in our lab (Open Lab) complete an initial ‘Design for the Lab’ (4 weeks) and Research Methods (CSC8602) training (Autumn, Year 1). The student will also gain valuable experience in conducting participatory design research, developing interview and focus group skills, Cultural Probes, and Interpretative Phenomenological Analysis. Support will be provided in the submission (and running) of workshops for major conferences, academic writing and reviewing for conferences and journals and will develop further workplace-oriented skills through an industry internship.

**References & Further Reading**


**Further Information**

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