Edinburgh. She is a member of the Centre for Speech Technology Research and the Human Communication Research Centre. Her research focuses on adapting speech synthesis and spoken dialogue systems to the needs, abilites and preferences of older users.

Detailed Programme

The details of some talks will be finalised soon.

The general format of the summer school is formal lectures from recognised speakers, supplemented by laboratory-based work to get a real feel for the technologies to be covered. The programme (subject to change) is as follows.

Monday 1st June 2009

13.00-14.00 Lunch

14.00-14.30 Welcome and Introduction to Summer School

Prof. Ken Turner, Computing Science and Mathematics, University of Stirling

Ken will introduce the objectives and organisation of the summer school.

14.30-15.30 The Gator Tech Smart House: An Assistive Environment for Successful Aging

Prof. Sumi Helal, Computer and Information Science and Engineering, University of Florida, USA

This talk will describe the Gator Tech Smart House that has been under development during the past seven years. This is an ongoing home care project focused on elder care. The talk will give an overview of the project, including the problems that it has tried to solve and the specific technologies that have been developed to address these problems. The lessons learned from the work will be drawn out.

15.30-16.00 Tea/Coffee

16.00-17.00 Labours of Love in The Digital Home Of The Future

Prof. Richard Harper, Microsoft Research Cambridge

What will homes of the future be? Will they offer all sorts of automation that will let the occupants be lazy and indolent? Will this make for contentment? Automation will have a place in the home of the future, but the concern is not with providing the individual with machines that take over every labour. Contentment at home will also be delivered through allowing people to invest in labours of love. These can take many forms and can be supported in various new ways. In this talk, Richard will describe some of those that are being investigated at Microsoft's Socio-Digital Systems group in Cambridge. It is in the following and other ways that homes of the future can be made richer, more profoundly 'home-like' places by allowing people to invest in their chosen labours of love.

Homes are places that one retreats to and relaxes in, but they are also places from which one celebrates one's friendships and family. Loved ones are kept in touch with so as to make friendship and familial bonds 'real'. Homes are also places to construct devices that allow the past and/or the people within it to be honoured. Amongst the devices we have been exploring are those which enable people to keep in touch in ways that are more expressive than has been possible hitherto.

- Wayve is one such device, and is the culmination of a variety of home messaging concepts that we have explored over the past three or four years. It is designed to allow people to connect families and friends playfully and creatively, and represents a new genre of communication for the home.
- HomeBook is a social networking service designed to bring members of families closer together when they are apart. Trials of this technology have

shown that it fosters visual family blogs.
- Cellframe is a small standalone wireless display and communication device that links to Homebook. It allows those, such as grandparents, who have remained outside digital social networking into the experience and the benefits that this can provide.
- TimeCard is a device designed to display a digital record of a person's activities. This record that is created through combining user-generated input with content from a novel information-gathering engine that scours the web for relevant information. This content can be added to a Timecard so as to highlight different aspects of a person's past. Timecards can act as displays placed on mantlepieces and walls, thus honouring the person represented.

18.00-19.00 Poster Session

Students will be asked to submit an A3-sized poster to explain their current work and plans. Experienced researchers will be available to provide individual advice to students on their plans.

19.00-20.00 Welcome Reception

A welcome reception with drinks and nibbles will allow students to get to know each other and some of the speakers in an informal atmosphere.

Tuesday 2nd June 2009

09.00-10.00 The Atlas Sensor Platform: A Service Platform for Creating and Programming Smart Spaces

Prof. Sumi Helal, Computer and Information Science and Engineering, University of Florida, USA

This talk will present the motivation behind the Atlas service platform. The talk will explain the technical details of how the platform is designed, and will explore how it has been used in the Gator Tech Smart House.

10.00-11.00 Extending Independence and Quality of Life

Prof. John Arnott, Computing, University of Dundee

This talk will introduce aspects of home care technology that aim to enhance independent living and quality of life for older people and people with disabilities. Automation of domestic processes and environmental control can make life easier and more practical for such users. Strategies in this area also include modelling of domestic activity and lifestyle to help stakeholders (e.g. residents and carers) to propose interventions to support life at home. Wireless and mobile communication environments can be considered as well as fixed settings. Perspectives on information security and privacy are of major importance in an application domain of this nature.

11.00-11.30 Tea/Coffee

11.30-12.15 Data Fusion to support Home Care

Chris Martin, Computing, University of Dundee

There are a variety of sensor technologies available, from off-the-shelf ready-to-install solutions to highly specific and bespoke ones. Effective sensor fusion requires a detailed knowledge of the types of sensors available and their characteristics. Important aspects of this include methods of connectivity and data storage. Complementary to a detailed knowledge of sensor technology is the ability to take a typical care situation and to map the technology onto the scenario. It is necessary to take into account the care, technical and sociological impact the technology may have. This can be achieved by a number of existing and emerging Human Computer Interaction techniques, such as those under development by the MATCH project.

12.15-13.00 Home Data Supporting The "Dialogue of Care"

Dr. Nick Hine, Computing, University of Dundee

Care involves a variety of different social, medical and informal carers, each with a different relationship with an older person needing care. For carers to be effective, they need accurate and pertinent data that they can discuss and contextualise. When data is gathered from home-based technologies, it can be presented in a variety of ways that can reveal different aspects of the wellbeing of the older person. The challenge is to extract the most appropriate data from the vast pool of sensor and fused data streams, and to present the data in a form that makes sense to the older person and to the stakeholders. This talk will explore some techniques for handling data, and some of the presentation and visualisation issues that need to be considered if the home-based sensor data is to be useful.

13.00-14.00 Lunch

14.00-15.30 Practical Work 1: Gathering Information to support Care

This practical will involve small groups making sense of a care scenario. The work will identify who is involved, what the care needs are, what information can support these needs, and what technology is necessary to make this all work. The initial requirements stage will be followed by implementing the required sensor fusion and acquiring some live data. Following this, some time will be spent generating visualisations that communicate this data to the parties identified in the initial stages.

15.30-16.00 Tea/Coffee

16.00-17.00 Practical Work 2: Gathering Information to support Care

Continued from the earlier practical.

17.00-18.00 Break-Out Sessions

There will be an opportunity for informal discussions of issues that have arisen from the talks and the practicals.

Wednesday 3rd June 2009

09.00-10.00 The Scottish Telecare Programme

Moira Mackenzie, Joint Improvement Team, Edinburgh

The use of technology to support independence and promote choice for vulnerable people is gaining prominence and recognition right across Europe. In Scotland, a national development programme and strategy have been established to encourage the expansion of telecare as part of mainstream community care service provision. This talk:

- will review progress so far
- will summarise the findings of an independent evaluation of the first two years of the programme, including identifying current barriers/enablers to the adoption of telecare
- will provide video-based input from senior strategic managers, service users and carers regarding the perceived impacts/issues of telecare from their perspectives
- will encourage practical discussion/debate on the future direction of the programme.

10.00-11.00 Policy Rules for Home Care

Prof. Ken Turner, Computing Science and Mathematics, University of Stirling

This talk will explain how policy-based management can be used to support home care. Policies are rules for how a home care system should react to events.

Because policies are high-level, they allow the behaviour of a home care system to be modified by non-technical people without programming. The approach taken in the ACCENT system will be discussed for home care.

11.00-11.30 Tea/Coffee

11.30-13.00 Services and Devices for Home Care

Dr. Mario Kolberg, Computing Science and Mathematics, University of Stirling

This talk will introduce the basic concepts of service oriented computing. The nature of home care services will be discussed. An overview will be given of the OSGi service platform. It will be explained how this supports a variety of networked devices in the home. A brief review will be given of major standards for wired/wireless devices in the home.

13.00-14.00 Lunch

14.00-15.30 Practical Work 3: Services for Home Care

This practical will allow students to gain hands-on experience of developing home care services. The lab setup will use a variety of wired/wireless sensors and actuators. These will be controlled via a service platform and a policy system. Lab groups will given a brief description of a care need that might be satisfied by appropriate technology. Each group will then refine the requirements, design a simple home care service to meet these, and create a prototype implementation.

15.30-16.00 Tea/Coffee

16.00-17.00 Practical Work 4: Services for Home Care

Continued from the earlier practical.

17.00-18.00 Break-Out Sessions

There will be an opportunity for informal discussions of issues that have arisen from the talks and the practicals.

Thursday 4th June 2009

09.00-09.40 Introduction to Multimodal Interaction

Prof. Stephen Brewster, Computing Science, University of Glasgow

This talk will give an overview of multimodal sensory channel input and output devices. The emphasis will be on non-graphical, non-speech sound, haptic, tactile, and gestural interfaces. Various issues will be introduced concerning the design and implementation of effective multimodal interaction. Examples will be given of building assistive multimodal home care technologies and systems.

09.40-10.20 Speech Interfaces in Smart Environments

Prof. Steve Renals, Centre for Speech Technology Research, University of Edinburgh

Speech interfaces allow users to interact with technology using the most natural medium of all - speech. This talk will discuss what voice interfaces are, with particular emphasis on speech input. The five main components of voice interfaces will be introduced: speech input, natural language understanding, dialogue management, natural language generation, and speech output

10.20-11.00 Challenges of Dynamic Adaptation and Personalisation in Home Care Systems

Phil Gray, Computing Science, University of Glasgow

This talk will review state-of-the-art techniques for providing dynamic adaptation of functionality and for improving user experience of interactive computing systems

(particularly ubiquitous ones). It will discuss the difficulties of applying these techniques in the context of home care and home care systems.

11.00-11.30 Tea/Coffee

11.30-12.15 Speech and Dialogue Technology in The Context of Ageing

Dr. Maria Wolters, Centre for Speech Technology Research, University of Edinburgh

This talk will look at ways in which voice interfaces can be tailored to the requirements of older people. It will be seen how ageing affects speech, hearing and cognition. The consequences of these age-related changes will be considered for the design and implementation of speech interfaces.

12.15-13.00 User-Centred Design and Evaluation of Home Care Systems

Dr. Marilyn McGee-Lennon, Computing Science, University of Glasgow

This talk will explore various issues surrounding the successful design and evaluation of home care technologies and systems. There are many stakeholders in home care, and many sources of change and conflict. This makes it difficult to easily capture what requirements the system should satisfy. Some of the key issues will be discussed. User-centred methods will be introduced for design and evaluation in the context of home care.

13.00-14.00 Lunch

14.00-14.45 Speech Synthesis

Dr. Simon King, Centre for Speech Technology Research, University of Edinburgh

This talk will provide an introduction to speech synthesis technology in preparation for the subsequent practical.

14.45-15.30 Practical Work 5A: Multimodal Interaction [choice]

This practical will explore the advantages and disadvantages of using state-of-the-art speech synthesis systems to generate messages for applications in the home care domain.

14.45-15.30 Practical Work 5B: Speech Synthesis [choice]

This practical will give the opportunity to explore a selection of multimodal interaction techniques such as earcons (structured non-speech sound), gesture and vibration to send home care reminders and alerts. It will explore these in the context of using a tool for configuring when and how each type of message should be sent within the home. Personas and scenarios will be provided to help decide how best to design and evaluate multimodal reminders for real users of home care systems.

15.30-16.00 Tea/Coffee

16.00-17.00 Practical Work 6A: Multimodal Interaction [choice]

Continued from the earlier practical.

16.00-17.00 Practical Work 6B: Speech Synthesis [choice]

Continued from the earlier practical.

19.00-22.00 Farewell Dinner

A farewell dinner in a nearby restaurant will give an opportunity to round off the week.

Friday 5th June 2009

09.00-10.30 PeerCare: Social Networks for Senior Citizens

Prof. Wendy Mackay, INRIA Futurs, Université de Paris-Sud, Orsay, France

This talk will describe work on interLiving (a three-year participatory design project with six multi-household families in France and Sweden) and on ICI-TV (designed for senior citizens living in France in conjunction with a technology start-up). Our studies revealed the need for 'communication appliances' that enable participants to stay in touch with family and neighbours by exchanging explicit messages (such as handwritten notes or photos) and implicit information (such as presence and activity levels). Providing participants with extremely lightweight communication with their peers enables them to keep an eye out for each other, thus maintaining the local support networks that faciliate ageing in place.

10.30-11.00 Wrap-Up and Last Thoughts

Prof. Ken Turner, Computing Science and Mathematics, University of Stirling

Ken will round off the summer school, and will lead a discussion on future activities.

11.00-11.30 Tea/Coffee

11.30-13.00 Free Time

13.00-14.00 Lunch