

# USER CENTRE/VOCA

THE UNIVERSITY IS ONE OF THE WORLD'S LEADING CENTRES FOR RESEARCH INTO AUGMENTATIVE AND ALTERNATIVE COMMUNICATION TECHNOLOGIES FOR PEOPLE WITH SEVERE COMMUNICATION DIFFICULTIES, HELPING GIVE THEM A VOICE.

We have also led the way in bringing the benefits of modern technology to the elderly. This autumn has seen a celebration of ongoing achievement and the launch of a major new project that aims to dramatically change the way people with no speech and complex disabilities can converse with others.

For the past ten years the Queen Mother Building at the heart of the University campus has been welcoming visitors who have become research pioneers. Tech-savvy octogenarians, adults with aphasia, and other adults who use augmentative and alternative communication methods have all helped drive research programmes that are helping to enhance the lives of people across society.

Many of them gathered in September to celebrate a decade of activity for the User Centre, with a plaque unveiled in memory of John Gibson, first chair and founding member of the Centre who sadly passed away last year.

The Centre's research is led by Professor Annalu Waller, who received an OBE earlier this year

for her work, and is based upon the interaction between the public and the University.

"We collaborate with a broad range of groups to ensure that technological systems are built to meet the needs and aspirations of a wide variety of people," said Professor Waller. "This work is very beneficial to society and helps to enhance the lives of many individuals.

"We are world-leading in inclusive technology because our groups allow students and researchers to work with people with severe speech and physical disabilities, adults with aphasia and older people, thereby generating real results. From dentistry to psychology, the User Centre allows the wider University to communicate with people who have complex needs. This makes the students aware that when they develop software or research it has to be accessible for everyone."

Brian Cox, former University Rector and Hollywood actor, has agreed to be the new Patron of the User Centre, having been a keen supporter of its innovative work since its foundation.



Brian said, "These groups have a huge role to play in teaching right across the entire University. I am delighted to see they continue to provide such wonderful inclusion for locals and consistently strive towards inclusive research. It's an honour to be the Patron of such a world-leading centre."

Computer-based systems – called Voice Output Communication Aids (VOCAs) – use word prediction to speed up typing, a feature similar to that commonly found on mobile phones or tablets for texting and emailing.

However, for those with complex disabilities, like Professor Stephen Hawking, using typing to communicate can still be extremely slow. With as little as two words per minute generated, face-to-face conversation can be very difficult. It is estimated more than a quarter of a million people in the UK are at risk of isolation because they are unable to speak and are in need of some form of augmentative or alternative communication (AAC) to support them with a severe communication difficulty.

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A new £1million project launched by the University, with colleagues at the University of Cambridge, is looking to develop much more advanced, intuitive and quicker systems to enable better communication.

“Despite four decades of VOCA development, users seldom go beyond basic needs-based utterances as communication rates remain, at best, ten times slower than natural speech,” explained Rolf Black, one of the project investigators in Computing at the University. “This makes conversation almost impossible and is immensely frustrating for both the user and the listener. We want to improve that situation considerably by developing new systems which go far beyond word prediction.”

The team want to produce the first VOCA system which will not only predict words and phrases but will provide access to extended conversation by predicting narrative text elements tailored to an ongoing conversation.

By harnessing recent progress in machine learning and computer vision, they plan to build a VOCA



that gives its non-speaking user quick access to speech tailored to the current conversation. In order to predict what a person might want to say, this VOCA will learn from information it gathers automatically about conversational partners, previous conversations and events, and the locations in which these take place.

The project is named ‘Augmenting Communication using Environmental Data to drive Language Prediction – ACE-LP’ and has a number of partners including Capability Scotland and Scope, the two leading charities

for people with complex disabilities in the UK, and the ENT at Ninewells Hospital, NHS Tayside. The project is funded by the UK Engineering and Physical Sciences Research Council (EPSRC).

The researchers are looking for people with complex disabilities to take part in the project. More information is available at the project website - <http://ACE-LP.ac.uk>.

A video featuring interviewers with researchers and participants can be seen at <https://youtu.be/DKTGBuh70r4>.