CogWatch

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Developing rehabilitation tools for stroke survivors with mental difficulties

The problem

Many stroke survivors suffer from **problems with mental processes** such as language, attention and memory. These difficulties are harder to identify than the physical symptoms of stroke and often get overlooked during a patient's rehabilitation.

Mental difficulties can have a very **negative impact** on a stroke survivor's quality of life and can increase their **dependence** on family members for daily support.

The CogWatch project aims to help stroke patients who have trouble performing **ordered sequences of movements**, such as those required to make a cup of tea or to brush their teeth. These patients may have normal movement of their hands and arms but struggle to complete everyday activities because they cannot execute the correct sequence of movements necessary to complete a task.

This type of impairment is termed 'Apraxia and Action Disorganisation Syndrome' (AADS) by doctors and, although it is hard to diagnose, it is quite common. Recently, scientists in the UK found that perhaps as many as 68% of stroke patients have problems typical of AADS.

How will CogWatch help?

The CogWatch researchers are investigating the specific problems faced by AADS patients and developing **new technologies** to assist them with their daily activities.

The ultimate aim is to develop a personalised rehabilitation system that can be installed into the homes of stroke survivors. It will silently monitor them as they go about their daily routine and provide helpful and relevant information to guide them when they make errors.

COG WATCH

Cognitive Rehabilitation of Apraxia & Action Disorganisation Syndrome

If CogWatch is successful it has the potential to:

- **enable stroke patients with AADS to overcome the mental challenges that impair their daily lives**
- **improve their quality of life in the long term.**

How will CogWatch work?

The system will use 'intelligent' everyday objects, like cutlery or a tea kettle, that contain sensors to monitor orientation, motion and grip strength. A central processing system will wirelessly collect the object data and combine it to assess how the objects are being held and used.

During a task, such as making a cup of tea, the system will track the actions of the user through the intelligent tools. When an error is detected, it will notify the user and provide guidance to assist them in completing the task.

Guidance could be in the form of relevant images on a display screen, audible sounds or instructions, or the physical vibration of a wrist watch.

The CogWatch system will:

- **Guide user actions to help complete daily tasks.**
- **Make users more aware of the mental errors they commit.**
- **Help users learn to overcome their errors.**
- **Alert users if their safety is at risk**

Do you want to help?

We are looking for stroke survivors who experience problems with completing everyday tasks to participate in our research.

If you live in the West Midlands area and would like more information, please contact:

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SEVENTH FRAMEWORK PROGRAMME

The CogWatch partners

University of Birmingham · Technische Universität München · BMT Group · RGB · headwise · Stroke association