

Milbotix

Wearable technologies for use in the care of older adults and people with dementia

Challenge

Milbotix Ltd is creating sensor-instrumented smart socks to support the care of people with neurocognitive disorders such as dementia, autism spectrum disorders, and learning disabilities. The sock can detect signs of physiological distress associated with pain, anxiety, and frustration with a high degree of accuracy (70-80%), and incorporate e-textile sensors, electronics, and machine learning. It will be used primarily by people who are unable to verbalise distress for whom untreated pain and/or unmet needs frequently lead to agitation. Dealing with agitated patients is stressful and time consuming for carers being able to predict when such situations are likely to arise will provide a better outcome for the patient and enable the carer to be proactive in meeting the patient's needs.

Solution

The project conducted a thorough review of academic and trade publications of hardware and software/algorithmic elements of PPG sensing. This review identified issues with the initial prototype. Areas of future development were identified. The support received from the HTH was instrumental in resolving issues with the original design of the bespoke PPG sensor.

HTH Contribution

Having trialled a proof-of-concept prototype with over 70 healthy people, the HTH are working with Milbotix to deliver the next generation of technology for evaluation in care homes. Milbotix approached the HTH for support to develop a bespoke ankle-worn photoplethysmography (PPG) sensor. Off-the-shelf modules lack the required sensitivity, so Milbotix handed over a design prototype to the HTH for them to test and improve. After appraising the original design, the HTH undertook a spiral development approach improving each part of the system in turn, making small design tweaks and eventually locating and improving on the original performance issues. by the end of the project Milbotix has a functional prototype capable of acquiring a PPG signal from the ankle.



Testimonial

‘John Eveness and the Health Tech Hub team made a valuable contribution to the development of our sensor-instrumented smart socks, designed to help dementia carers minimise and better manage distress and anxiety. I wouldn’t hesitate to recommend the University of the West of England’s Health Tech Accelerator Programme to companies operating in the Digital Health, Health Tech and Med Tech spaces.’

Dr Zeke Steer

CEO, Milbotix Ltd

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