Title
CurrentCare

Keywords
Monitoring. Internet of Things, Sensors.

Abstract
The CurrentCare Project

Index

Analysis

TARGET CLIENT GROUP

The population distribution in the United Kingdom has an increasingly large number of older people, many of whom live alone. The cost of care provision for these people places an increasing burden as the elderly people, although not incapacitated through illness, require monitoring to ensure that they are able remain independent.

The target group would be monitored using a range of sensor equipment monitored through the Internet of Things and analysed for variations using Artificial Intelligence operated within the IBM Watson infrastructure.

THE TECHOLOGIES

Sensors placed in the elderly persons home monitor their physical wellbeing and activities. The pattern of behaviour of many elderly people is consistent and predictable and the connected software monitors changes in behaviour and alerts stakeholders such as the care professionals or relatives. The system uses a rules-based 'intelligent' system to direct the alerts to the most appropriate responder for each event raised.
The systems were developed following a research project conducted on the Ise of Wight to monitor the use of utilities in remote areas of economic hardship.

AIMS OF THE PROGRAMME

The programme developed by IBM, CurrentCare, (CurrentCare, 2015) was designed to use unobtrusive passive monitoring using a range of devices, allowing family and stakeholders in the provision of care to monitor the elderly and intervene physically when required.
The monitoring of the devices could be carried out using 'Artificial Intelligence' (AI) using IBM's Watson systems (Watson, 2019). AI (AI, 2019) is used to identify trends in very large data sets and may implement Machine Learning (Expert System, 2017) to predict further changes using extrapolation. Such analysis has only been feasible recently as a result of the increase in computing facilities using the development of technology as described above.
The deployment of low-cost sensors that are easy to install used broadband connections to send data to the Watson servers where 'rules' would be used to detect events using applications hosted on Bluemix (Bluemix, 2019). Such low-cost sensors are available as a result of a technology 'push'

resulting from improvement in computer systems and component architecture, and the market 'pull' of society's desire to make use of the Internet of Things and the systems to which they connect.
One of the very first cognitive functions impaired by dementia is spatial navigation to determine where.

The following examples of rules and actions following reporting illustrate how intervention can be initiated when unusual patterns of behaviour are reported by Bluemix analysis on Watson:

- If dad hasn't had a cup of tea by 10am, text his daughter

- If the front door opens between midnight and 4am

   o Send a text to his son

   o Send a text to his neighbour

- If the temperature falls below 15 degrees, turn the heating on.

The platform for CurrentCare offered deployment options that automated the connection of the monitoring sensors to the servers conducting analysis of their state. The development of the deployment options was based an energy monitoring project on the Isle of Wight, UK, the Chale project (Chale Community Project, 2018), designed to reduce energy poverty in Social Housing.

The aim of the systems developed was to allow those with responsibility for the care of the elderly to implement tested systems at a cost reduced by scale of deployment. The hardware and software developed to run system was designed to minimise the set up at the elderly person's residence and require little user intervention during its use. Most products developed had a familiar 'domestic product' shape and interface.

CONCLUSION

We must address the issue of how we might care for our increasingly elderly population as our current approach is often ineffective and unaffordable.

It is easy to consider how the use of skilled staff currently used to monitor people on a rota basis can be costly and inefficient. Many of the visits made require no use of the specialist skills the visitors have, thereby making those skills unavailable to those needing them. The financial effect of having to provide more staff than is needed is significant, particularly when most authorities are under pressure for the use of their funds.

The need for monitoring the health of a growing elderly population and intervention in their care represents a significant challenge. The use of skilled human staff to carry out the 'caring' functions is not feasible on a large scale, given the changing demographic structures described above. Without a change in approach, the isolation and lack of care described by Campbell and others will increase. The use of programmes such as CurrentCare must be considered to reduce the burden of cost through the use of skilled human staff.

There must be concerns about the use of data directly identifying individuals and such data must be protected. The introduction of the General Data Protection Regulations in the European Union in 2018 (ICO, 2018) has placed additional responsibilities on those who process data about individuals.

The expertise of companies such as IBM can allow individuals and organisations to use the technologies they have developed for protection of data as 'turnkey' solutions and reduce the expense they may have to incur.

Our society must introduce radical innovation to realise feasible solutions to these issues of care or we will fail in our duty to our population.

FURTHER INFORMATION

Links

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