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Low-cost, Long Term Distributed Patient Research Platform

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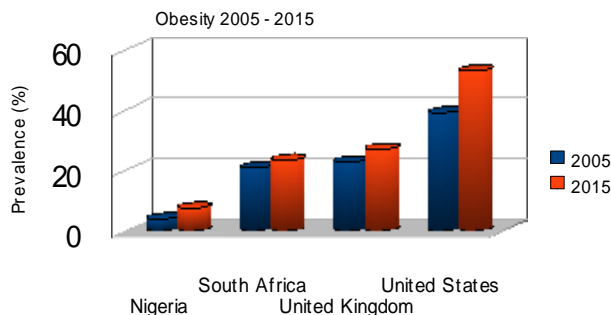
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Project Aims

The group intends to develop a Long-term Patient Monitoring Research Platform to support and assist health-care providers. The Research platform, which does not intend to rely on a central server or a continuously connected Internet connection, aims to act as a low-cost support tool to aid health-care providers of the future.

Need for New Healthcare

In 2005, The World Health Organisation stated that 60% of worldwide mortality is due to chronic disease [1], while 80% of chronic diseases occur in low and middle income countries. Chronic disease, along with a global aging population, a population that is becoming obese [2], and worldwide pandemics (such as HIV/AIDS) combined with high-in-demand healthcare providers[3] and increased costs of healthcare [4], paint a disastrous picture for the future of healthcare.
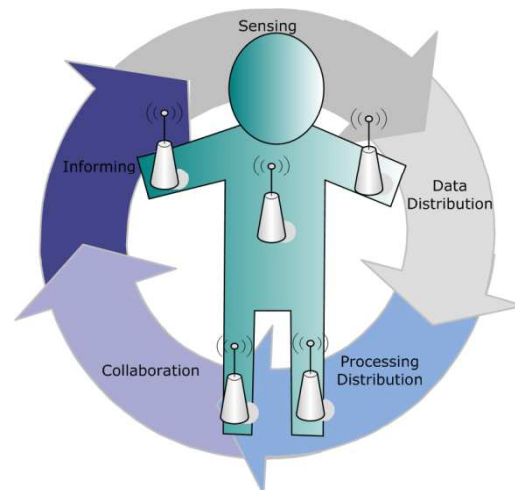

Increasing Obesity [2]

Modern healthcare and disease response is aimed at "acute, episodic care" [5] which does not support a sustainable healthcare model for the future and therefore research into new ways of long term monitoring/management and personalised healthcare through WSN's is being undertaken. By decreasing the healthcare provider's time expended on remedial tasks such as physiological measurements, processing of patient details and continuous monitoring of overall patient health, one can decrease the requirement of more healthcare providers while increasing the patient ownership and responsibility of their health record.

Need for Healthcare Providers [3]

System Structure

The research platform is therefore intended to not rely on a central server, but rather on a distributed intelligent network of the sensor nodes. By investigating modern parallel processing techniques [6] and distributed algorithms for data fusion (such as [7]), along with novel, low-cost sensors for physiological measurements, the research platform will be compared against traditional methods of centralised servers and the client-server model. The research platform's initial investigations will involve attempting to find patterns in signals for diagnosis and quickly identifying emergency events during long-term monitoring.

System Overview

References

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