Sensing behaviour in healthcare design

We are entering an era of distributed healthcare that should fit and respond to individual needs, behaviour and lifestyles. Designing such systems is a challenging task that requires continuous information about human behaviour on a large scale, for which pervasive sensing (e.g. using smartphones and wearables) presents exciting opportunities. While mobile sensing approaches are fuelling research in many areas, their use in engineering design remains limited. In this work, we present a collection of common behavioural measures from literature that can be used for a broad range of applications. We focus specifically on activity and location data that can easily be obtained from smartphones or wearables. We further demonstrate how these are applied in healthcare design using an example from dementia care. Comparing a current and proposed scenario exemplifies how integrating sensor-derived information about user behaviour can support the healthcare design goals of personalisation, adaptability and scalability, while emphasising patient quality of life.

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