Using Smartwatches for Privacy Awareness in Pervasive Environments

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Introduction

Future pervasive computing environments are likely to include large numbers of sensors such as cameras and microphones that are embedded in the physical environment and that can capture personal data. Such data can be used for a wide range of applications ranging from augmented cognition through entertainment to personalised advertising.

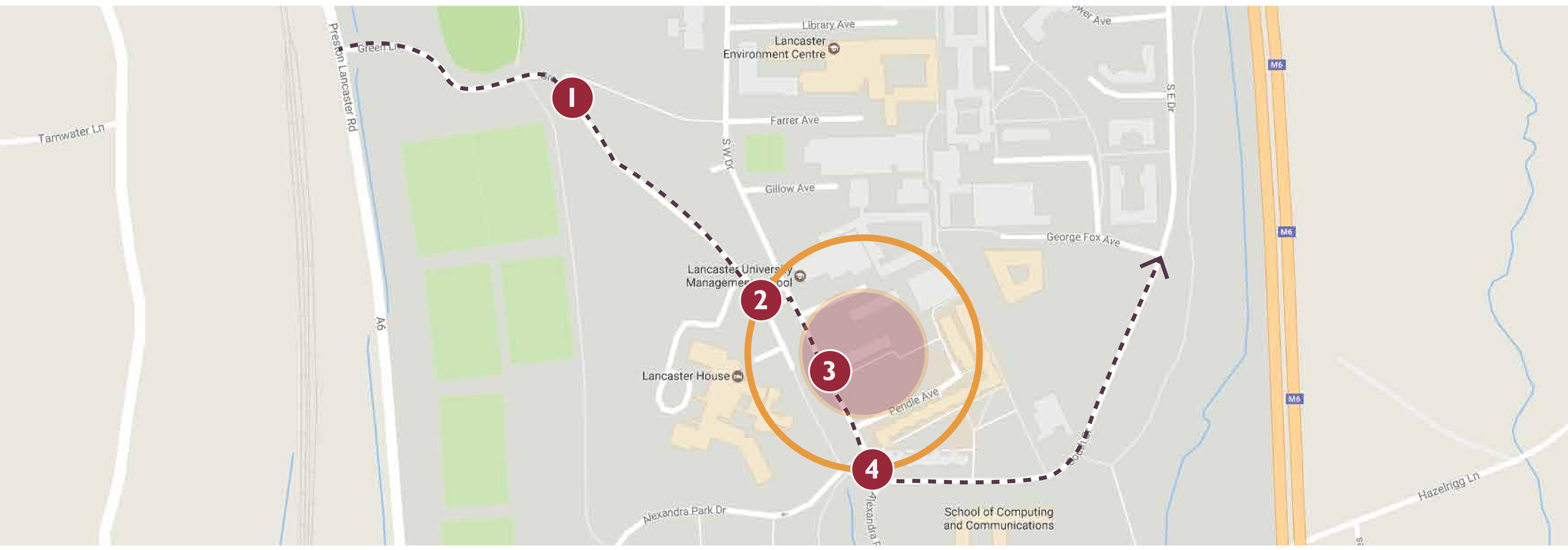
However, our ability to capture personal user data far exceeds our understanding of how to manage issues of trust, privacy and consent with potentially far-reaching consequences for both individuals and society. In the PACTMAN project we are aiming to develop systems that empower users to decide when and how they should disclose personal data.

Our first exploration of this space has included the development of a prototype smartwatch application that can inform users when they are entering an environment that may compromise their privacy.

1 Using Privacy Maps

In order to describe environments that might compromise user privacy, the prototype makes use of pre-defined "Privacy Maps" that are automatically downloaded onto the user client. Such maps consist of comprehensive information about the environment including:

- **Map start and expiration dates**
  Maps can have a validity date and expire after a specific time to force the mobile client to refresh map entries.
- **Trigger Zone:**
  When a user enters the trigger zone (2), they receive a notification on their mobile phone about a data capture zone.
- **Zone Region:**
  The area in which caputre devices are used (3).
- **Zone Capabilities:**
  List of sensors and data capture devices used in the region.

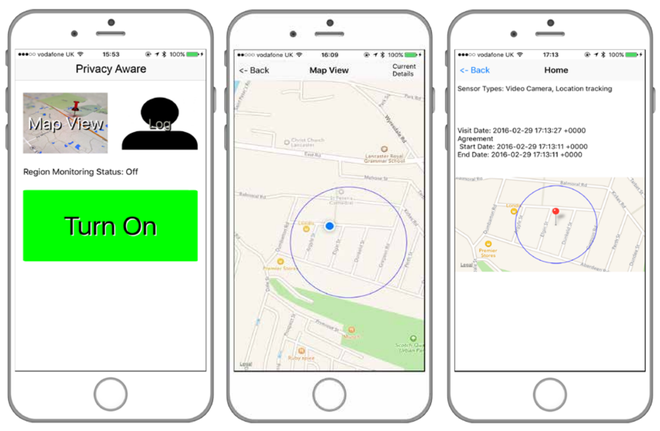


2 Notification on Data Capture

Upon entering a trigger zone, the users receive a notification on their Watch about the data catoure regtion they are about to enter including a list of active sensors in that region.

3 Overview of Capture Devices within the Region

Users can view details about the region they are currently inside. This includes expriation dates of the region, and all active sensors.



4 Region Exit

Upon leaving a data capture region, the sensing infrastructure located inside the data capture zone could be automaticaly notified about the user presence. Equally, users could also be notified about leaving a capture zone.

For example, this could be used to let the user know about caputred video or audio, and ways in which this information can be accessed or retrieved in the future.