USER-PRESENCE AWARE SYSTEMS

Project Group:

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Code files attached: 1. "bluetooth_locking_unlocking.py"
2. "rssi_inquiry.py"

The design has been depicted in the form of Functional block diagram and Process Flow diagram presented previously. The design has been further enhanced considering Security and Accuracy into account.

Implementation Details:

The main modules as identified are:

1. Bluetooth based locking/Unlocking
2. Detection of Proximity
3. Streaming of application

Implementation Environment: Linux-Ubuntu
Coding language: Python
Packages used: Bluez, Pybluez

Bluetooth based locking/Unlocking:

This module deals with the main aspects of the system. The functionality is to pair with a particular user, detect his/her presence through bluetooth signal from his/her mobile phone, if the system is in "Lock Screen state" upon detection of paired user(device) the system will automatically unlock the screen and make it usable to the user directly without the need for entering password manually. When the user leaves the range of the system the system automatically locks the screen. The security has been taken care by allowing only root user to change the paired device statically.

Code: Filename: "bluetooth_locking_unlocking.py"
Implementation command: $python bluetooth_locking_unlocking.py

Detection of Proximity:

This module has major usage in other two modules. The functionality is to detect the proximity of Bluetooth device thereby allowing accurate implementation of other two modules. It considers the strength of the Bluetooth signal received, analyses it over few samples, maps it based on observation into distance or distance zones broadly. The module of Received Signal Strength Identification (RSSI) has been used in achieving this. Signal strength detection has been done, its mapping to corresponding distance zones comes under the last phase of the project.

Code: Filename: "rssi_inquiry.py"
Implementation command: $python rssi_inquiry.py

Streaming of application:

This helps in transfer of application, it is a method to use the users distance from a pc or laptop to transfer running applications to the nearest system. Such an extension is meant for environment where the user may have more than one system in his/her home. The last phase i.e., next phase deals with this module.