Presence Detection of Mobile Participants in Smart Room Environments

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Abstract

The Smart Room system aims at automation of holding such events as conferences, meetings, and lectures. The system constitutes a smart environment with providing different services to the room participants. Such services allow the users to participate in the event held in the room (showing a presentation, looking at room sensors measurements) and to offer personalized options (recommending a speech based on user's interests). Services are accessed via a Smart Room mobile client installed on the user personal devices.

Personalized services need information about user presence in the room (users join or leave the room). For example, it can be used to display on the agenda screen which speakers are now in the room. Presence information can be identified and collected using the Innorange Footfall Technology (http://www.innorange.fi/). This demo shows the use of the technology integrated into the Smart-M3 based development of Smart Room.

The technology is based on dedicated sensor (TP-Link WDR3600 with USB Bluetooth dongle), which tracks MAC addresses of participants' mobile devices. Every device produces mobile network traffic (within Wi-Fi or Bluetooth connection). Each traffic unit has received signal strength indication (RSSI) value. The closer device is located to the sensor the higher RSSI value is. The traffic is continuously monitored. If the RSSI value is greater than the threshold then the participant is treated as present in the room. The last presence time is periodically recorded in the smart room user profile (a part of the Smart Room space) and forms user's presence history which can be further analyzed.

Index Terms: Smart Room, Presence detection, Activity tracking.