**Face-to-Face Proximity Estimation Using Bluetooth On Smartphones**

**ABSTRACT:**

The availability of “always-on” communications has tremendous implications for how people interact socially. In particular, sociologists are interested in the question if such pervasive access increases or decreases face-to-face interactions. Unlike triangulation which seeks to precisely define position, the question of face-to-face interaction reduces to one of proximity, i.e., are the individuals within a certain distance? Moreover, the problem of proximity estimation is complicated by the fact that the measurement must be quite precise (1-1.5 m) and can cover a wide variety of environments. Existing approaches such as GPS and Wi-Fi triangulation are insufficient to meet the requirements of accuracy and flexibility. In contrast, Bluetooth, which is commonly available on most smartphones, provides a compelling alternative for proximity estimation. In this paper, we demonstrate through experimental studies the efficacy of Bluetooth for this exact purpose. We propose a proximity estimation model to determine the distance based on the RSSI values of Bluetooth and light sensor data in different environments. We present several real world scenarios and explore Bluetooth proximity estimation on Android with respect to accuracy and power consumption.

**EXISTING SYSTEM:**

In recent years, the presence of portable devices ranging from the traditional laptop to fully fledged smartphones has introduced low-cost, always-on network connectivity to significant swaths of society. Network applications designed for communication and connectivity provide the facility for people to reach anywhere at any time in the mobile network fabric. Digital communication, such as texting and social networking, connect individuals and communities with ever expanding information flows, all the while becoming increasingly more interwoven. There are compelling research questions whether such digital social interactions are modifying the nature and frequency of human social interactions. A key metric for sociologists is whether these networks facilitate face-to-face interactions or whether these networks impede face-to-face interactions.

**DISADVANTAGES OF EXISTING SYSTEM:**

* Where subjects are asked about their social interaction proximity, is unreliable.
* Interactions are not limited to any particular area and can take place at a wide variety of locations

**PROPOSED SYSTEM:**

We demonstrate the viability of using Bluetooth for the purposes of face-to-face proximity estimation and propose a proximity estimation model with appropriate smoothing and consideration of a wide variety of typical environments. We study the relationship between the value of Bluetooth RSSI and distance based on empirical measurements and compares the results with the theoretical results using the radio propagation model.

We explore the energy efficiency and accuracy of Bluetooth compared with Wi-Fi and GPS via real-life measurements. We deploy an application “PhoneMonitor” which collects data such as Bluetooth RSSI values on 196 Android-based phones. Based on the data collection platform, we are able to use the proximity estimation model across several real-world cases to provide high accurate determination of face-to-face interaction distance

**ADVANTAGES OF PROPOSED SYSTEM:**

* It provides adequate accuracy for detecting something like buddy proximity (e.g., median accuracy of 20-30 meters),
* Different from the above proximity detection method, our work is a fine grain Bluetooth-based proximity detection method which can provide adequate accuracy for face-to-face proximity estimation without environment limitations.

**SYSTEM ARCHITECTURE:**

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**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Pentium IV 2.4 GHz.
* Hard Disk : 40 GB.
* Floppy Drive : 1.44 Mb.
* Monitor : 15 VGA Colour.
* Mouse : Logitech.
* Ram : 512 Mb.
* MOBILE : ANDROID

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows XP/7.
* Coding Language : Java 1.7
* Tool Kit : Android 2.3 ABOVE
* IDE : Eclipse

**REFERENCE:**

Shu Liu, Yingxin Jiang, and Aaron Striegel, Member, IEEE **“Face-to-Face Proximity Estimation Using Bluetooth On Smartphones”** IEEE TRANSACTIONS ON MOBILE COMPUTING, VOL. 13, NO. 4, APRIL 2014.