Smartphone Application for aged persons safety using Bluetooth Technology
Contents

- Background
- RSSI Measurement Experiment
- Application
- Conclusion
Previous Study:
The Use of Measurement of Distance Through Signal Strength of Bluetooth to Curb Lost Child and Lost Property Accidents
Proposal: Smartphone Application for aged persons safety using Bluetooth Technology
Background

Reduce this kind of situation!!

11th Floor Room 123

DEAD

Not noticing anything.....

Apartment
Background

Number of People Aged 65 and Above Dying Alone

![Chart showing the number of people aged 65 and above dying alone from 1999 to 2008. The number increases from year to year, reaching a peak in 2008.](chart.png)
A wireless communication radio signal attenuates according to the distance from the transmitting terminal.

**Distance can be estimated**

**RSSI**
(Received Signal Strength Indication)
# Wireless communications

<table>
<thead>
<tr>
<th></th>
<th>Bluetooth</th>
<th>Bluetooth LE</th>
<th>WiFi</th>
<th>ZigBee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric power saving</td>
<td>◯</td>
<td>◯</td>
<td>×</td>
<td>◯</td>
</tr>
<tr>
<td>Penetration rate</td>
<td>◯</td>
<td>×</td>
<td>◯</td>
<td>×</td>
</tr>
<tr>
<td>Proximity putative function</td>
<td>×</td>
<td>◯</td>
<td>×</td>
<td>×</td>
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</tbody>
</table>
# Bluetooth specifications

<table>
<thead>
<tr>
<th>Class</th>
<th>Maximum permitted power [mW]</th>
<th>Range [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>100</td>
<td>~100</td>
</tr>
<tr>
<td>✔ Class 2</td>
<td>2.5</td>
<td>~10</td>
</tr>
<tr>
<td>Class 3</td>
<td>1</td>
<td>~5</td>
</tr>
</tbody>
</table>

- Good power saving
- High penetration
Contents

- Background
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Experiments

- **Objective**
  Confirm a characteristic of RSSI.

- **Methodology**
  Smartphone and Smartphone Corridor / Room
Results (Corridor)

![Graph showing RSSI vs Distance in a corridor](image)
Room Experiments

- Smartphone
  - A: 3m
  - B: 2m
  - C: 4m
  - D: 2m
Results (Room)

![Graph showing RSSI (dBm)](image)

Point A (0m)  
Point B (2m)  
Point C (3m)  
Point D (4m)
Results (Room)

- RSSI is not monotone decreasing.
Contents

- Background
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Application

- Registration
- Measurement and Distance Estimation
- Safety Confirmation
Our Goal

None
Contents

- Background
- RSSI Measurement Experiment
- Application
- Conclusion
Conclusions

- Distance RSSI characteristic is observed.

- Now developing smartphone application using the results from the experiments.
Thank you!