

Bluetooth Mesh with simultaneous Beacon extension

The use of Bluetooth Mesh Networks to connect lights is becoming more and more common. With such networked systems, it is extremely useful for facility management to be able to detect the positions of the individual lamps automatically. However, Bluetooth Mesh does not offer the possibility to locate the positions of the separate lights in a room. Therefore, the positions of the lights need to be recorded manually. To solve this problem, possibilities to conduct positioning within a Mesh Network, using the existing hardware, were investigated. In particular, the use of fix installed Bluetooth Beacons was examined.

In the researched solution, the measured reception strengths of such Beacons were evaluated, and the position was determined. Use Cases that describe a possible interaction between a user and such a system were designed. From those Use Cases, a concept for the implementation was developed. Parts of the concept were realized and their functionality examined.

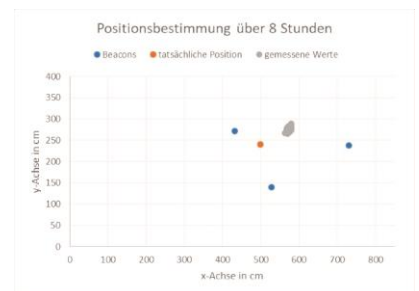
For this purpose, specific tests on the behavior of the RSSI values at different distances between sender and receiver were executed. Parameters for the trilateration were determined from the results of these measurements.

It could be shown that it is possible to determine a position within a Bluetooth Mesh network using Beacons. However, the accuracy is limited due to fluctuations in the RSSI values. To determine if the system also works on a larger scale, further tests would have to be carried out.

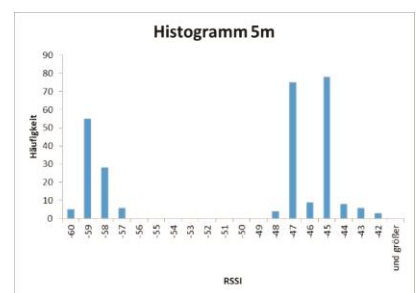


Diplomandin
Seraina Blum

Dozent
Andreas Rüst



The results of the positioning remained relatively constant even over a long period of time.



There were strong fluctuations in the measurements of the RSSI values.