

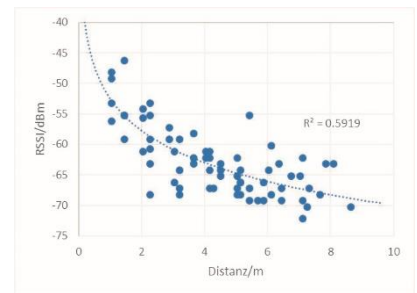
Motion detection with Bluetooth Low Energy (BLE)

The usage of wireless mobile devices has become a significant part in the modern society. In many situations, it is important to locate positions and movements of certain people or objects. If mobile device tracking was possible, an event can be triggered for a defined behavior. The goal of this thesis is to show the feasibility of such a tracking function. More precisely, to detect how a Bluetooth Low Energy device moves towards a point and estimate the distance to the device at any time. A series of studies investigating different approaches are presented. The aim of these experiments is to determine the position of a transmitter with the aid of one or more receivers. In a laboratory condition with sources of interference, a positional deviation of 3.91 m must be expected, using triangulation and 120 measured values per receiver. If this test is done in the open field, the results do not show improvements. It therefore shows that in a reasonable time, no acceptable position-estimation is possible.

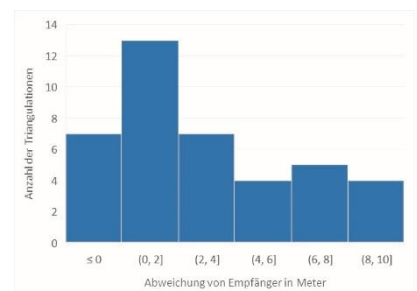


Diplomierende
Nicolai Buck
Samuel Dällenbach

Dozent
Juan-Mario Gruber



Relationship between signal strength and distance in a room with sources of interference, in which a function is fitted.



Positional deviation of a triangulation with two meters of space between the antennas in a room with sources of interference. A value equal or less than zero means that no triangulation was possible.