

# **Influence of the RSSI Scan Duration of Smartphones in Kinematic Wi-Fi Fingerprinting**

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## **SUMMARY**

Nowadays Wi-Fi fingerprinting is a popular method for indoor positioning with smartphones. It is based on static RSSI (Received Signal Strength Indicator) measurements of the surrounding Access Points (APs) at reference points with known coordinates in the training phase. In this work, static training measurements are completely not foreseen as they are very time consuming and thus labour intensive. In contrast, waypoints are defined along the users' trajectories and the training phase is carried out kinematically while walking along and passing by. Kinematic measurements, however, pose much greater challenges than the usual static or stop-and-go measurements. In the experiments the Wi-Fi RSSI were measured with three different smartphones kinematically along two trajectories that started in front of the entrances of an office building leading through the ground floor and ending in the courtyard of the building. It could be shown that the results can vary significantly depending on the smartphone used, which is mainly caused by the duration of a Wi-Fi RSSI scan. This scan duration depends of course on the number of visible APs which was very different for the individual smartphones. The results of the position determination showed deviations from the ground truth of about 2 to 5 m, which is only slightly worse than with static training measurements. The big advantage is that no static training measurements but continuous system training is performed.

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