

Erfassung, Speicherung und Analyse von Messdaten in Mobilfunknetzen

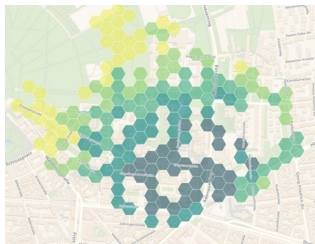
ETIT Project

Project

The project work encompasses the design and implementation of a system for acquiring, storing, and analyzing mobile network measurement data under real-world conditions. For this purpose, Keysight smartphones with specialized measurement software are used, enabling detailed recording of network parameters. During measurements in Karlsruhe, signal quality data is collected at various locations and along selected movement profiles (e.g., streets or behind buildings). Specific base stations, frequencies, and frequency bands can be selected to investigate their influence on connection quality. Additionally, cell handovers are recorded to analyze dynamic network processes.

The collected data is stored in a structured database to facilitate efficient access. Analysis is performed using both Keysight Nemo and custom programs, for example, in Python. The goal is to gain insights into the spatial and temporal distribution of signal quality.

A key focus is on graphical presentation, such as maps to visualize signal quality. Machine learning methods can also be employed to identify patterns and enable further analysis.



Tasks

1. Introduction to the topic of "mobile communications"
2. Measurements of mobile signal quality in Karlsruhe using specialized smartphones
3. Analysis of base stations, frequencies, and cell handovers
4. Data storage in a database (SQL, Parquet, h5p)
5. Graphical representation with Python, e.g., for signal quality maps

Requirements

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