Semantic modeling and enrichment of Mobile and WiFi Network Data

Uzun, Abdulbaki, author

Abstrak

This book discusses the fusion of mobile and WiFi network data with semantic technologies and diverse context sources for offering semantically enriched context-aware services in the telecommunications domain.

It presents the OpenMobileNetwork as a platform for providing estimated and semantically enriched mobile and WiFi network topology data using the principles of Linked Data. This platform is based on the OpenMobileNetwork Ontology consisting of a set of network context ontology facets that describe mobile network cells as well as WiFi access points from a topological perspective and geographically relate their coverage areas to other context sources.

The book also introduces Linked Crowdsourced Data and its corresponding Context Data Cloud Ontology, which is a crowdsourced dataset combining static location data with dynamic context information. Linked Crowdsourced Data supports the OpenMobileNetwork by providing the necessary context data richness for more sophisticated semantically enriched context-aware services.

Various application scenarios and proof of concept services as well as two separate evaluations are part of the book. As the usability of the provided services closely depends on the quality of the approximated network topologies, it compares the estimated positions for mobile network cells within the OpenMobileNetwork to a small set of real-world cell positions. The results prove that context-aware services based on the OpenMobileNetwork rely on a solid and accurate network topology dataset. The book also evaluates the performance of the exemplary Semantic Tracking as well as Semantic Geocoding services, verifying the applicability and added value of semantically enriched mobile and WiFi network data.