

Advanced Indoor Tracking Based on the Viterbi Algorithm and Semantic Data

Author(s) - Institution(s):

Jens Trogh, UGent
David Plets, UGent
Luc Martens, UGent
Wout Joseph, UGent

Corresponding author email: jens.trogh@intec.ugent.be

Corresponding WG group: TWGI

Abstract:

In this work a real-time indoor tracking system based on the Viterbi algorithm is developed. This Viterbi principle is used in combination with semantic data to improve the accuracy: i.e., the environment of the object that is being tracked and a motion model. The starting point is a fingerprinting technique for which an advanced network planner is used to automatically construct the radio map, avoiding a time consuming measurement campaign. The developed algorithm was verified with simulations and with experiments in a building-wide testbed for sensor experiments, where a median accuracy below 2 m was obtained. Compared to a reference algorithm without Viterbi or semantic data, the results indicated a significant improvement: the mean accuracy and standard deviation improved by respectively 26.1% and 65.3%.