TALOGS: TEMPORARY ANALYSIS OF LOGISTIC SYSTEMS

Ideas on utilisation

In small and medium-sized enterprises (SME) for optimization of logistic processes (e.g. picking) there are often a lack of analysable data base. Current applied methods for data generation of logistic systems, e.g. work-sampling studies, are usually labour-intensive and inexact. Indoor tracking systems used in this area are expensive and need a high installation effort. With the combination of innovative transmitter (beacon) and receiver technology (e.g. smartphones) as well as the evaluation of process profiles of material flow objects, a method is to be developed which can be applied quickly and for a limited time for logistic analysis with little effort. The technological platform is
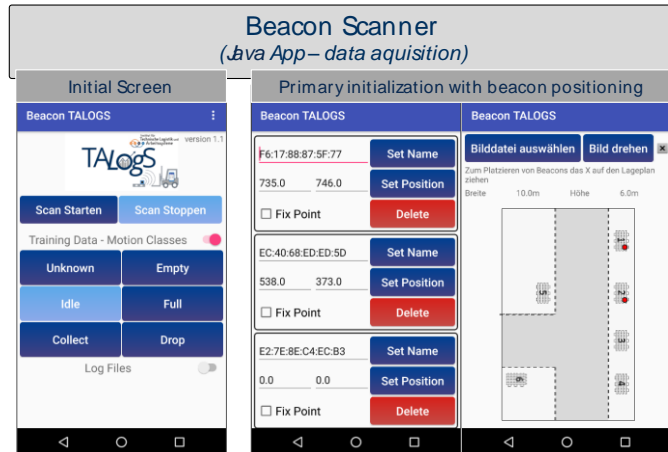

Figure 1: Views of the TaLogS smartphone app, left side View of training data generation, right side View of primary initialization with assignment of beacons to material flow objects.
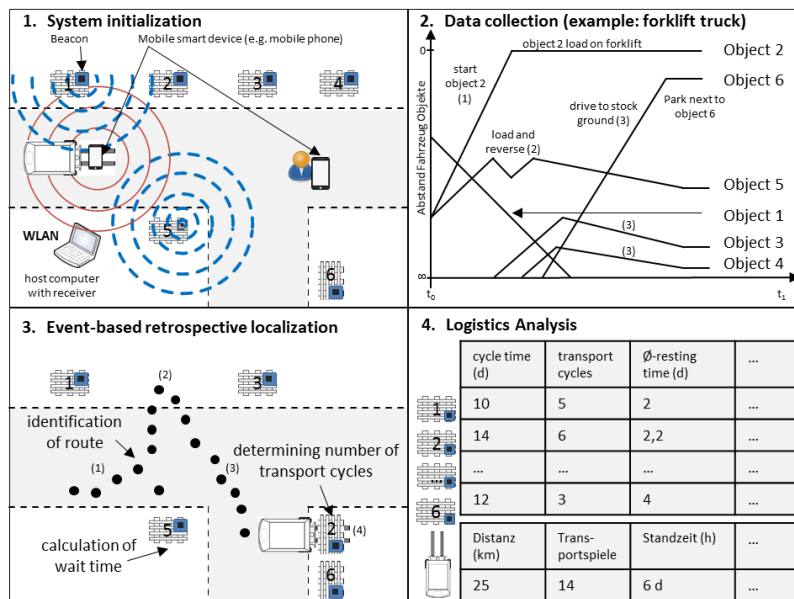
based on Bluetooth-based transmitters, so-called beacons, and smart mobile devices, e.g. smart phones as receivers, between which distance data can be measured and retrospectively derived process profiles. The distance is determined using the Received Signal Strength Indicator (RSSI), which is a measure of the signal field strength between transmitter and receiver. Process classes are assigned with monitored machine learning algorithms, which is why it is necessary to generate training data during the initialization phase (see figure 1 and 2).

Figure 2: System Application, 1. step definition of the objective of the study, installation of beacons and smartphones (approx. 2 days), Generation of training data; 2. step data colleciton (approx. 5-10 days); 3. step application of machine learning algorithms for process allocation and algorithm for location (approx. 2 days); 4. step logistics analysis e.g. calculating processing time, capacity utilization, routes with derivation of optimization potentials (approx. 3 days)

Potential adopters of technology

Potential adopters are companies who want to analyse and optimize their logistic processes and do not have access to an extensive database. With the developed technology, data can be recorded for a defined period with little effort. Potential investigation scenarios are, for example forklift traffic or the zoning of a warehouse. Depending on the research scenario, the technology is suitable for data acquisition in both production and logistics companies.

Advantages of technology

Data acquisition is usually either cost-intensive through multi-moment recording or cost-intensive through automatic systems based on RFID technology. With the use of attractively priced transmitter and receiver technology, combined with algorithms for process classification and localization, a low-cost, but sufficiently accurate option for data acquisition was developed. It can be assumed that with this method the costs are lower than those of established methods. The system is easy to install by user and reusable. Furthermore, the software can be installed on (almost) any terminal device.

Market and context of technology

A demonstrator currently exists with which the method can be evaluated and further improved on the basis of practical scenarios. Companies are invited for testing purposes. After completion of the research project, there is a plan to further develop the application as a product. Our current developments focus on algorithms for better retrospective localization and adaptation of machine learning algorithms for improved process classification.

Preconditions in adopting enterprises

Special requirements do not exist. Access to means of transport and aids, layout plans and work instructions.

Funding advice

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