

Smart Construction

Artificial Intelligence in Construction

Intelligent Systems for the Construction Industry

DFKI is working on various projects and initiatives to establish methods and technologies using Artificial Intelligence in the construction industry. Our goal is to tap into application-oriented AI technologies in relevant areas of the construction sector.

The construction industry has a lot of catching up to do in terms of digitization: While BIM systems (Building Information Modeling) and modeling and simulation tools are already being used in construction planning, in the actual execution, i.e. for the valuable practical work on the construction site itself with its various trades, analog media and processes still dominate.

The ConWearDi project, funded by the German Federal Ministry of Education and Research (BMBF), is one example that is geared towards new strategies. Together with other project partners, DFKI developed innovative, technology-based services driven by digital construction processes, where various value chains in the construction industry are interconnected.

The Embedded Intelligence research department shows how an automatic recognition of the state of construction, remote management and predictive maintenance can be implemented on site. Intelligent sensors inside construction materials, on the construction site or built into machines supply the AI technologies with data. During the project, a web platform, based on Industry 4.0 technologies was developed that enables a digital exchange of information between all parties involved in the construction and enables intelligent planning and control services as well as continuous quality assurance



and documentation processes. This makes it possible to utilize real-time information for intelligent control and monitoring of construction processes in the future.

Specific application examples were developed in ConWearDi, for example the detection of wear and tear and material usage in machine tools or the automatic documentation of processes using activity recognition. Intelligent assistance systems provide context-relevant instructions to the worker on site, for example automated, optimal adjustment of the machine settings. In the long-term analysis of automated temperature and humidity measurements inside building materials, intelligent algorithms support energy management and enable anomaly detection to identify potential construction defects and make predictions about the condition of an object.


“Enoba - Smart Construction”, funded by EIT Digital, developed innovative, AI-driven services for construction companies to support digitization across the entire value chain, for example a holistic solution for monitoring activities of construction vehicles with integrated resource and route optimization.

As a partner of the Mittelstand 4.0 Competence Center “Planning and Construction”, the DFKI Embedded Intelligence research department is developing demonstrators in the area of “AI in Construction” with the goal to open up application-oriented AI technologies in relevant areas for the construction industry.


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