SCCH
Software Competence Center
Hagenberg

Programme: COMET – Competence Centers for Excellent Technologies

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HUMANS IN INDUSTRIE 4.0

INDUSTRY 4.0 (THE SMART FACTORY) IS USUALLY EQUATED WITH NETWORKING AND IMPROVED FLEXIBILITY. HOWEVER, AN IMPORTANT FOCUS IS THE INTEGRATION OF HUMANS IN THIS NEW WORK ENVIRONMENT.

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The automation of production has reached a high level. Tasks that cannot be automated are often complex and require comprehensive support by software systems. Due to the increasing complexity of manual work and the ubiquitous support by software, the interaction between man and machine gets an even more important role.

SCCH has therefore started research on user-centric software engineering. Here, we combine our strengths in software engineering with the requirements of adequate human-machine interaction. In the SUIT project, we use this user-centered software engineering approach to develop the best possible interaction for the specific application at the company partner. We develop and explore the interaction together with the end user based on the latest technologies and research results and the necessary methods. In addition, during the implementation of the application, permanent feedback from the end users ensures the appropriate implementation of the interaction. Although software engineering is now investing a lot in design, adequate implementation in the target technology is still a methodology gap and often breaks with the design approaches.

In the SUIT project, we enhanced our research results and applied the domain-specific language environment to make robot programming as simple and clear as possible for domain experts without programming knowledge. But also to maintain the usual power and

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flexibility of the programming environment at the partner. In order to determine the requirements and the initial situation, the previous use and the software for robot automation were analyzed and the users were observed during usage of the programming tool.

Impact and effects

The SCCH did not only research on the optimal DSL but also on the tools for DSL handling and safe programming. The user interfaces of the machines are transformed into modern, reduced and gesture-controlled surfaces. The ubiquitous use of touch interfaces in the private sector determines the development here, and the design of apps is also adopted, so that the user finds the familiar interaction possibilities again. In the conception and development of such surfaces, SCCH has already developed new ideas with renowned machine manufacturers and used them in research projects.

In addition to the classic user interfaces for software, SCCH also research towards new interaction possibil-

ities that can be integrated into the working environment of the end user. From gesture control via wearable computing and communication via brain waves, everything is conceivable here and there are already solutions, such as control via the "Magic Shoe" of a well-known machine manufacturer. It is not only important to master the technology and use the possibilities creatively, but also to integrate the users by suitable methods over the entire development cycle.
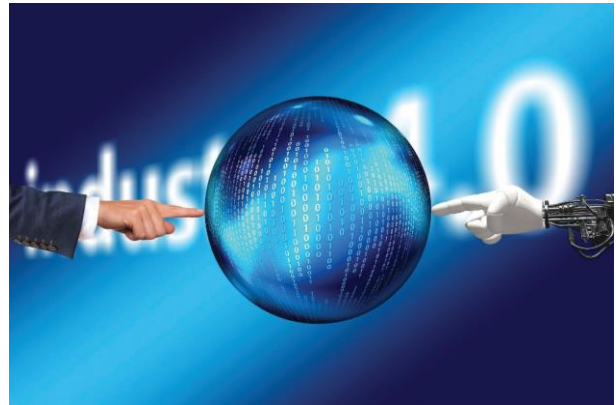
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