



Integration of speech recognition and development of an interaction concept for an assistance platform

Assistance systems are nowadays often used in medical laboratories to support workers in recurring processes, to make sure errors are avoided and processes are executed correctly everytime. However, laboratory tasks often require to use both hands which makes interaction with a tablet-based assistance system complicated. Therefore, the main task of the thesis will be to integrate speech recognition into the software architecture of an existing assistance platform called *AWARE* (which stands for assistance workflow architecture). The main purpose of speech input will be to interact with the assistance system, e.g. give commands to proceed to a next task, step back to the previous task or cancel the current process. However, speech recognition should also be used to capture short notes that should be attached to the execution protocols of the assisted processes and to record the current state of understanding in learning interventions. The assistance platform uses a dockerized java-based backend and a web-based react (javascript/typescript) frontend. External services for speech recognition can not be used, therefore an alternative must be chosen that could be self-hosted in our architecture. An evaluation of the implemented speech-recognition shall conclude this thesis and prove the success of the chosen implementation approach.

Medical assistance systems ranging from robots to smart home devices and apps provide support for people in physical and cognitive tasks. Based on a deep understanding of social interaction and human cognition, we develop effective intelligent assistance systems with the flexibility to co-construct interaction with different user groups (patients, relatives, doctors, nurses, etc.). This is achieved through a consistent *user-centered co-design*. Our goal is to support people in their well-being and participation through *studies and technology development* so that they can live autonomously and healthily.

More information is available at: <https://www.uni-bielefeld.de/fakultaeten/medizin/fakultaet/arbeitsgruppen/assistenzenzsysteme/>

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