

FRAUNHOFER INSTITUTE FOR
MANUFACTURING ENGINEERING AND AUTOMATION IPA

ASSISTIVE SYSTEM SOLUTIONS FOR LIFE SCIENCES

LAB ASSISTANCE



ASSISTIVE SYSTEMS SOLUTIONS IN YOUR LAB

What are Assistive Systems?

Think of the driver assistance systems of a modern car. A whole network of sensors will keep you in the lane when distracted or slow you down if you have missed a dangerous situation. It informs you about parameters such as tire pressure or upcoming traffic obstructions. In the future, gesture control and voice assistance will also find their way into vehicles.

Or think about Smart Home: You can start your favorite music or turn the lights on by your voice with speech assistance like Google Nest devices or Alexa. The heater can be turned on when one of the residents is on the way home. The more devices and sensors are linked, the smarter the system becomes and the more comfortable the user is.

Situation in Labs and the Future of Lab Assistance

In most of today's labs there is no such guidance. In the laboratory, assistance systems should ensure that processes could be carried out optimally in terms of time and quality. The important thing: especially in manual processes, the laboratory staff should be supported and not be spoon-feed or patronized! Assistance systems guide you step-by-step through the current process without being intrusive. They inform in case of deviations and document these automatically. Coupled with artificial intelligence, the system can make suggestions for the next step. It warns of errors that can be dangerous for the employee, the product or the end user.

Benefits

- Cost and time savings through less documentation effort
- Guided process execution and identification of deviations
- Extension of technical and methodical competence of laboratory staff
- Shortening of training times
- Support for self-control and personal responsibility

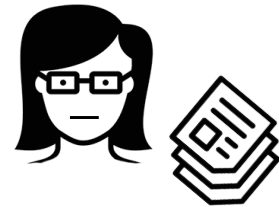
How we can help you to implement Assistive Systems in your Lab

- We analyse the processes and identify where assistance can help
- We evaluate current technologies and verify how they can help
- We develop and implement a networked assistance system
- We develop user-centred digital interfaces for the assistance system

EXAMPLE

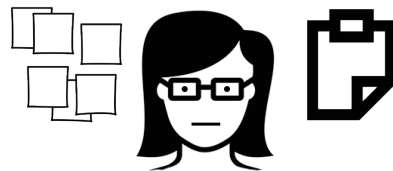
The Scenario

Christina is a lab assistant in a biotech company. She has to process highly complex, constantly changing protocols every day. Most of them run in parallel to avoid dead times. The documentation takes almost 30% of her time.



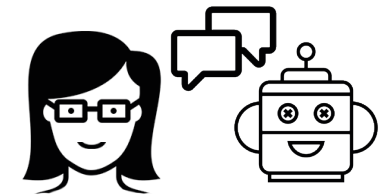
The Problem

The whole day Christina sits at a clean bench. The protocols stick to the front glass beside many sticky notes to remind her of different things. In order to prevent constant running back and forth she documents only at the end of her work.



The Solution

With speech assistance Christina can now document every step completely hands-free. She can ask questions about the process and can control devices in her surroundings. The error rate of Christina decreases, the documentation is complete and she has more time for the relevant process steps.



»Assistive Technology is devices and equipment we need to be functional in the environment.«

Ronald Mace

DIGITAL INTERFACES

Digital interfaces are the direct link between assistance systems and the user. They are responsible for both the simple input and output, as well as for a standardized transfer to in-system algorithms.

We develop digital interfaces that are optimized for laboratory processes and their users. We evaluate which technology is appropriate and makes the most sense in context of the lab environment.



We develop graphical user interfaces optimized for touch.



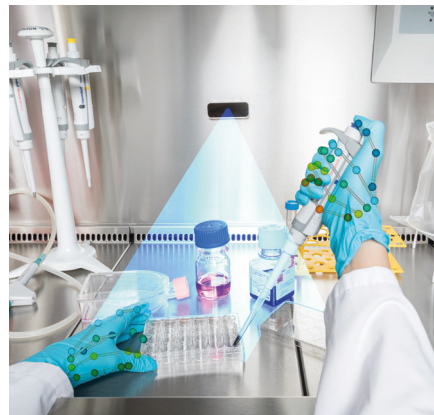
We look for suitable application scenarios for Augmented Reality.



We build up a workplace for manual pipetting processes. The graphical user interface shows information about the labware at the right time and directly beside. With step-by-step instructions and a dynamic layout the laboratory staff is guided through the entire process. The workstation can be connected with other devices and software and can share information about the process, deviations in every process step, measurements like pipetted volumes and much more.



We developed speech assistance for a hands-free control and documentation experience.



We work on gesture and object recognition for analysing the scene in the entire context.



We investigate where Pick-By-Light systems would be useful.

**WOULD YOU LIKE TO FIND OUT MORE ABOUT
LAB ASSISTANCE?**

GET IN TOUCH WITH US!

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