

Press Release



The assistant robot LISA has a sensing gripper arm that senses and cushions jostling and protects humans from injuring themselves on the robot.

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**LISA Helps**

We have been hearing and reading for a long time about assistant robots that silently and carefully zip around humans to liberate them from burdensome work. Nevertheless, a truly convincing high-tech assistant with a gripper arm is not yet commercially available. LISA - short for life science assistant - is intended to change that. In roughly one year, a prototype of this robot will be rolling through biotechnology labs, loading incubators and measuring equipment with sample trays in concert with human colleagues and accurately navigating from one lab instrument to the next. The developers from the Fraunhofer Institute for Factory Operation and Automation IFF in Magdeburg have especially made sure that their silent assistant is safe and injures no one. Only then will the German institutions for statutory accident insurance and prevention and TÜV give it their blessing for everyday use.

LISA is equipped with a sensing gripper arm designed to hold plastic dishes but not injure human beings. Its "artificial skin" consists of conductive foam and textiles and intelligent signal processing electronics. This skin immediately senses and cushions inadvertent jostling. A thermographic camera additionally registers body heat and indicates for instance if a human colleague's hand is in the way. The developers at the IFF and their seven project partners from industry and research aim to construct a robot suited for everyday routines that can already be cost effectively deployed shortly after the pilot phase - and around the clock at that. Hence, LISA was not overloaded with functionalities. It has a laser-aided navigation system with which it orients itself in familiar spaces and goes through doorways on its own. It safely navigates around obstacles and people. That suffices for everyday laboratory work anytime.

LISA uses language to communicate and, thanks to its large vocabulary, understands entire sentences like "Get me dish A4 from incubator 8." If something is unclear, it asks. Additionally, simple work commands can be entered through a touchscreen. LISA was conceived to be able to learn new actions easily. This is particularly important for life science laboratories in which new types of measuring stations are frequently installed or varied work steps are executed. "LISA was tailored precisely to its niche for use," says project coordinator Dr. Norbert Elkmann from the IFF. "This is the only way its everyday use will soon be possible - we could be that far in about one to two years."

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