

Service robotics for the nursing sector

As part of the Serodi project (Service Robotics for Personal Services), Fraunhofer IPA (Germany) collaborated with other research and application partners to develop service robotics solutions for the nursing sector.



The "intelligent care cart" uses some modules of the Care-o-Robot IV platform (Photo: IPA Fraunhofer)

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Service robots in healthcare are gaining importance. In the European Serodi project, "intelligent care carts" and the "robotic service assistants" were used in real-world trials in a hospital and at two care homes. This enabled the project partners to confirm the benefits of the robots for reducing the workload of nursing staff. Not enough nurses for too many patients or residents: this is a familiar problem in the nursing sector. To address this, there is a need for solutions that not only reduce the physical and information-management workload of the staff, but also free them up to spend more time with those in need of care.

The use of state-of-the-art nursing aids to assist the staff also makes it possible to add to the attraction of the nursing profession while maintaining an adequate quality of care also under challenging conditions. As part of the Serodi project (Service Robotics for Personal Services), Fraunhofer IPA (Germany) collaborated with other research and application partners to develop service robotics solutions for the nursing sector. Service robotics for the nursing sector conditions. This is where service robots of the kind developed by Fraunhofer IPA and its partners under the Serodi project can be of benefit. The project received funding from the German Federal Ministry for Education and Research.

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"Intelligent care cart" summoned at the press of a button

To cut down the legwork of the nursing staff and reduce the time spent keeping manual records of the consumption of medical supplies, Fraunhofer IPA in collaboration with the MLR company developed the "intelligent care cart". Using a smartphone, the nurse is able to summon the care cart to the desired room, whereupon it makes its own way there. If the room is on a different floor, the care cart can use the lift. A 3D sensor along with object recognition software enables the care cart to automatically register the consumption of medical supplies. If an item is running low or the battery needs recharging, the care cart travels autonomously to the storage area or charging station once this the staff has approved.



The robotic service assistant is capable of operating in common rooms at care homes and hospitals, where it serves drinks and snacks to the residents or patients (Photo: IPA Fraunhofer)



The service assistant can hold up to 28 cups or various snacks (Photo: IPA Fraunhofer)

Being of modular design, the care cart can be adapted to different application scenarios and practical requirements. While it served for the transport of laundry items at the care homes, it was used to carry wound treatment materials in the hospital. A further feature of the "intelligent care cart": it was always locked, the nurse opening it by logging in on the tablet. This also made it possible for the care cart to transport items that would otherwise have to be stored in a locked room and fetched only when needed. The "intelligent care cart" makes its own way to the desired room and is also capable of using a lift. The nurse can summon it from a smartphone, which means less legwork for staff.

Testing in coordinated real-world trials

The care carts developed as part of the project were used in two coordinated multi-week trials at the participating establishments in Mannheim (Germany), the University Clinic as well as the Waldhof and the Ida Scipio senior citizens' homes. Whereas, at the care homes, the robot was stocked with laundry items directly by the nursing staff on the ward, the care cart used at the University Clinic was integrated into the hospital's extensive logistical processes. The modular baskets containing the dressing materials were restocked at the hospital's central logistics facility and sent to the wards, which meant that all the nursing staff had to do was to replace empty baskets with pre-packaged ones, with no need to put all the items together themselves. To further reduce the workload of the staff, Fraunhofer IPA is currently working on a solution also to automate the changing of the modular baskets.

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