

Development of a digital assistant for performance diagnostics

Graduate



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Initial Situation: The blood lactate level test plays a central role in training planning in competitive sports. With the long-term goal of optimizing this process with artificial intelligence, employees at Davos Hospital turned to OST. Currently, the software landscape surrounding this test is very inconsistent: the data from the various devices used during the test is collected by different applications and manually transferred to an evaluation program. This process is not only time-consuming, but also carries a high risk of transmission errors and leads to inconsistent, decentralized data storage. This makes later analysis difficult.

Objective: The bachelor thesis “Development of a digital assistant for performance diagnostics” aimed to overcome the challenge of different applications by automating the interfaces. An important requirement was to collect the data in a central location and make it accessible via a website. In addition, strict compliance with the applicable data protection guidelines in the area of health information had to be ensured. The vision of the thesis was to create the technological basis for a future project in which artificial intelligence will be developed for data analysis.

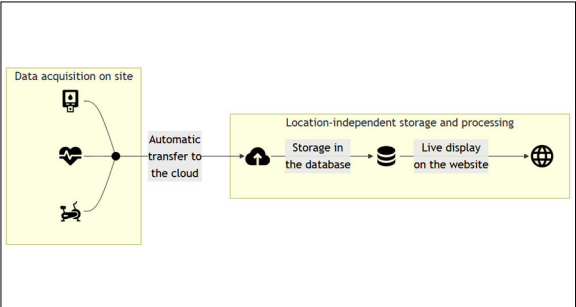
Result: The central requirement to replace and standardize the paper-based process was completely fulfilled. The system that was developed can digitally read the data from all the measuring devices that are used during the testruns. In addition, the system architecture was designed in a way that future expansions, such as the integration of new device types, are easily possible. During the development process, great importance was given to security in order to meet the requirements for handling sensitive medical data. Measures such as the encryption of all

digital communication and the robust authentication of users protect the system against unauthorized access. A final functional test has proven that the application is ready for productive use.

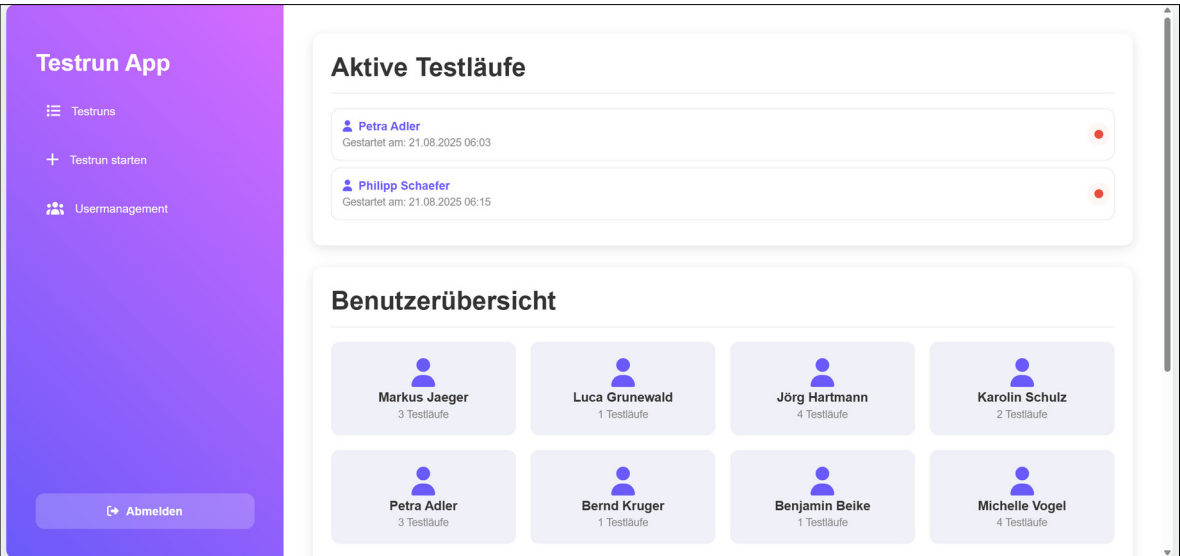
Home trainer, blood lactate meter and heart rate monitor used for the lactate level test
Own presentation



High-level procedure of the digitized lactate level test
Own presentation



Dashboard of the digital assistant for performance diagnostics
Own presentation



Advisor

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Subject Area

Information and Communication Systems, Computer Science