

58. Evaluating the reliability of eHealth-data

ICT-based home healthcare services are revolutionizing healthcare. The patient performs his own medical measurements and sends the results via the internet to the healthcare professional. The doctor has to trust and rely on the measurements to provide the correct medical advice. Unfortunately, people sometimes use a measurement device incorrectly, so that the reliability of the data becomes questionable.



Our demo assesses the overall quality of medical measurements by evaluating various quality aspects. We have developed a novel troubleshooting tool that can find possible causes of low data quality. For example, a patient's unstable measurement can be the result of incorrect sensor application, but it can also be the result of health deterioration.

Our technology provides the doctor with a unique interpretation of the patient's own medical measurements. For the acceptance of home healthcare services data reliability is crucial

ICT science question

How to evaluate the overall quality of measurements? The evaluation should involve different quality aspects of a measurement, such as information stability, device application and data timeliness.

Application

Our approach evaluates the measurement quality of medical measurements that people take at home by an activity monitoring system. Patients sometimes misuse the activity sensor and provide unstable measurements which complicates the interpretation by the doctor. In particular, patients might forget to apply the device or they place it incorrectly. Our application is able to detect such miscues.

With our partner, the Roessingh rehabilitation centre, we evaluate the activity measurement of COPD patients.

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COMMIT/ project
TheCS Trusted Healthcare Services

Alternative Application

Our approach can be applied to other domains that heavily rely on sensor data. Interesting alternative domains for application could be the automotive industry and smart energy grids, where multiple sensors are used and a unique interpretation is needed. Moreover, our approach can be used to investigate the causes of low data quality.



Reliable data contribute to fewer hospital visits, better diagnoses, lower costs; overall, a better healthcare.



Methods for evaluating data reliability can be integrated into healthcare services as plug and play components.



Methods enable doctors to trust and to rely on remotely measurements. Novel troubleshooting mechanisms are used to obtain the causes of low quality measurements. In this way patient compliance is improved.



The system includes methods to assess and to integrate various quality aspects of a measurement, such as information stability, measurement procedure and data timeliness.

