Anomaly detection in vital signs
Analyzing vital signs, such as heart rate, heart rate variability or respiratory rate, makes it possible to identify quality of sleep, stress level and anomalies such as sleep apnea or loss of consciousness. Abnormal patterns are swiftly detected by extensively collecting and continuously evaluating the data. This means medical care can be provided faster. Success of treatment can also be verified better. We use multiple sensors and situation-based algorithms to detect anomalies with certainty.

The digital hospital – data processed clearly
Health@Hand is a visual control station for use in healthcare facilities and hospitals, and offers staff the following functions:
- Digital representation of the real ward
- Overview of all medical and administrative data for the ward
- Visual processing for fast recording and decision-making
- Detailed display of individual rooms, individual patients, given time periods, equipment overview
- Access and interactive exchange via mobile devices possible
AI for individual health

At the center of AI-assisted health research is the question of how humans ultimately can make proper use of the data generated and processed by artificial intelligence. Visual computing technology is a fundamental approach. For years, Fraunhofer IGD has used methods and processes for machine learning and artificial intelligence to analyze and evaluate vital signs and disease-related patient data. These include AI-based medical image processing, visual cohort analysis and anomaly detection in vital signs.

Fraunhofer IGD and personalized medicine

Individual health is one of the core strategic topics of Fraunhofer IGD. The technology developed in this pursuit helps the transition from classic to personalized medicine with visual computing technology. Fraunhofer IGD’s specific solutions cover the entire treatment chain, from diagnosis to treatment, to follow-up care, and combine imaging processes with data-driven approaches in medicine.

Saving time and money with AI

AI for image analysis

Identifying and indicating anatomical structures in medical imaging data is required above all to plan and implement treatment. 3D image data forms the ideal basis for this – new learning processes from Fraunhofer IGD help doctors with time-consuming evaluation and analysis:

- Automated segmenting of anatomical structures in imaging data
- Automatic identification and indication of anomalies
- Illuminating 3D visualization
- Fast information processing instead of manual evaluation
- Fast analysis of complex imaging data
- Can be used for every area of the body
- Reduction in surgical interventions and subsequent lab work thanks to digitally gained knowledge

Visual cohort analysis

Cohorts generally describe patient groups with relevant commonalities. Fraunhofer IGD is developing tools for interactive data analysis in close consultation with clinical users. They compile a patient group and, with the help of custom visual analysis tools, see immediately whether a cohort is promising and how that cohort can be refined.