Karlsruhe Institute of Technology

IPEK
Institute of Product Engineering
at Karlsruhe Institute of Technology

Research Group: Human-Machine Systems

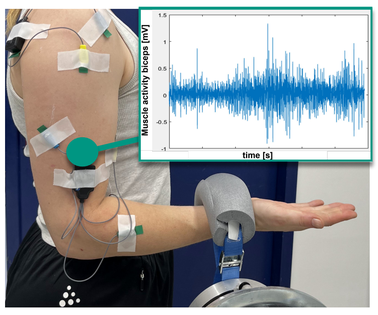
VISION

We analyze humans in their interaction with technical systems based on **valid measurands**, represent them in **human models**, and integrate them into the **product development process** of human-machine systems.

Product Development for Human-Machine Symbiosis

Analysis and Modeling of Physical Human-Machine Interaction

Measuring Muscle Activity with EMG

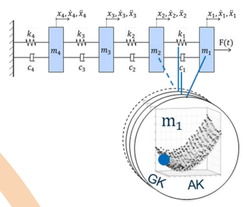


Musculoskeletal Human Modeling

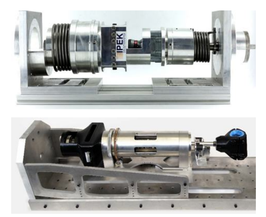


Development of Hand-Arm Models for Reproducible Testing

Virtual Models



Physical Models





Sensor Integration for Data Processing

Use Case Classification

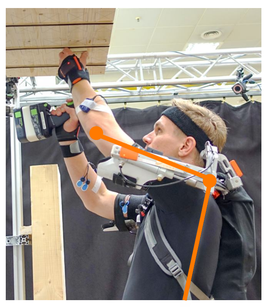


Posture Prediction



Simulating and Optimizing Exoskeleton Support

Optimized Support for Overhead Work



Coupling for Adaptive Support



Human Perception and User Experience

Vibration and Jerk Perception

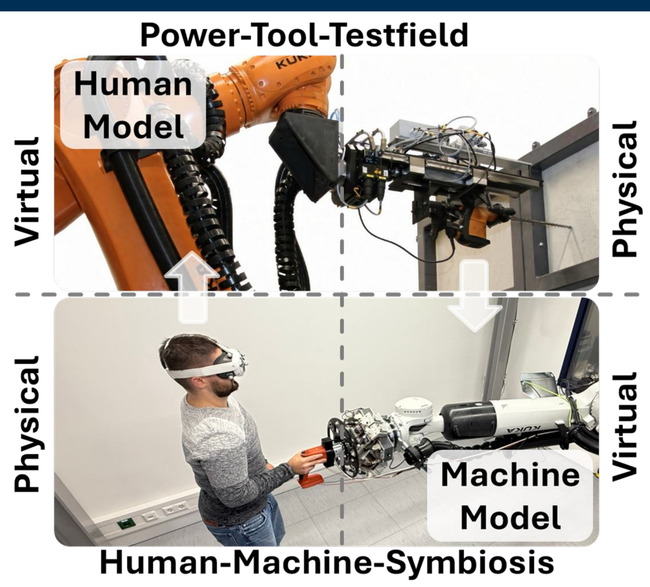


Usability and Perceived Quality



Test Benches

Power-Tool-Testfield



Human-Machine-Symbiosis Laboratory

Virtual and physical **modelling of the human** for **reproducible** testing of machines

Virtual and physical **modelling of the application** for **reproducible** testing of human behaviour (physiology, perception)

User Interaction Test Bench:

Induce Generic or Recorded Vibrations



Services

- Theoretical and Experimental **Investigation of Devices**
- Recording of **Interactions between Users, Devices,** and the **Application Environment**
- Development of **Validation Methods** for Handheld Devices and Device Subsystems, Including the **Development of Test Equipment**

Research Group:
Human-Machine Systems

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