

Sensor Systems for HealthCare

(FEIM – Future Electronics for Industry 4.0 and Medical 4.0 project)

Objectives of the Project

Development and implementation of sensor systems for integration into E-textiles, wearable electronics, smart beds, and other assistive devices to enable remote medical support in home care.

The primary objective is to establish conditions that enhance the efficiency of healthcare, particularly for individuals with limited mobility and elderly patients.

Topics covered by the Project

- **E-textiles and Wearable Electronics for Healthcare and Wellbeing**
 - Sensor System for Skin Hydration Measurement
 - Biocompatible Wearable Sensors
 - **Wearable and Portable Electronics for Remote Medicine**
 - Multi-Sensor Force Measurement Platforms for Motion Recording
 - Software Processing of Image and Audio Data from Telemonitoring
 - **Advanced Medical Technologies and Sensor Systems for Non-Invasive Monitoring and Therapy**
 - Bed Pressure and Incontinence Sensors
 - 3D-Printed Structures with Variable Stiffness
 - Image Analysis of Patients' Mental State
 - Multimodal Monitoring of Human Health and Activity
 - Flexible Metamaterial Antenna Elements for Microwave Imaging in Medicine
 - Software Application for Stroke Risk Stratification
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What will the Project Results enable?

- Adaptive bedsheets, pressure mats and 3-D elastics avert ulcers, easing nursing workload.
 - Wearable infrared and multimodal textile sensors deliver timely telecare.
 - Force-plate platforms quantify gait and balance, guiding faster, evidence-based rehabilitation.
 - Integrated analytics and software secure telemonitoring, fuse multimodal data, personalising rehab and care.
 - Printed biosensor arrays speed toxicity screens, cutting drug R&D overheads.
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Selected Results

- Industrial Design: Variable Multi-Sensor Force Measurement Platform for Motion Recording
- Utility Model: Sensor System for Skin Hydration Measurement Using Infrared Spectrophotometry
- Software: System for Stratification of Stroke Risk
- Software: Image and Audio Data Processing from Telemonitoring
- Prototype: Metamaterial Antenna Element for Microwave Imaging in Medicine Based on Flexible Substrates and Additive Manufacturing of Conductive Parts

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Partners involved:



MagicWARE



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More about FEIM project can be found on [projects webpage](#).