

Universal Ultrasound Camera platform for environmental surveillance

Precise Monitoring and Identification

In today's society, the precise monitoring and identification of people and objects is crucial in both healthcare and industrial measurement. Healthcare requires innovative solutions to enhance patient safety (e.g., patient monitoring, fall prevention) while maintaining privacy. In the industry, companies face challenges such as accurate object detection, monitoring of manufacturing processes, and minimizing production errors.

Our Solution: AI-Enabled Ultrasound Camera

The development of a compact ultrasound camera offers an effective solution to these challenges. By utilizing high-frequency sound waves, it enables contactless and three-dimensional visualization, improving both patient safety and industrial efficiency. This technology opens new perspectives for monitoring and analyzing movements and positions across various applications.

Benefits

- 4D Functionality: Spatial depth and dynamics
- Mobile Systems: Compact design for easy deployment.
- Privacy Preservation: Utilizes ultrasound for discreet monitoring
- Complementarity to Optical Methods: Enhances existing technologies

Application Fields

- **Healthcare**
 - Patient monitoring in clinical and caregiving settings
 - Position detection of patients in clinical environments
 - Early disease detection
- **Industrial Automation**
 - Robot vision
 - Surface inspection (material and defect detection)
 - Process monitoring (e.g., hydrogen monitoring)
- **Security and Military**
 - Stationary area and object surveillance
 - Drone operations



Fig. 1: Ultrasound camera demonstrator with a linear L-CMUT array

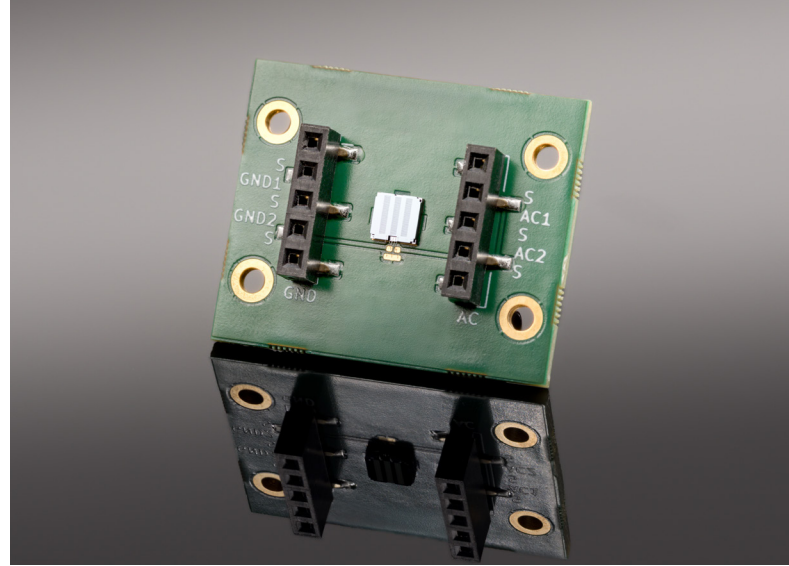


Fig. 2: Single ultrasound module comprising an L-CMUT Generation 2

Active Ultrasound Camera Concept

The active ultrasound camera operates on the principle of sound wave reflection. An array of ultrasound transmitters generates sound waves that travel through the air. Upon hitting an object, these waves are reflected back to an array of receivers. The captured data is processed using image reconstruction algorithms to create a three-dimensional image and/or using machine learning methods to assist in directly identifying objects, distances and movement patterns.

Our system approach enables an unprecedented level of compactness through silicon technology, providing access to raw data and application-specific training models.

Your Value

1. Interdisciplinary Expertise

Benefit from a wide range of knowledge in MEMS technology, electronics development, and AI algorithms.

2. Innovative Products

Access to highly precise, contactless monitoring systems in high demand in both healthcare and industry.

3. Resource Pooling

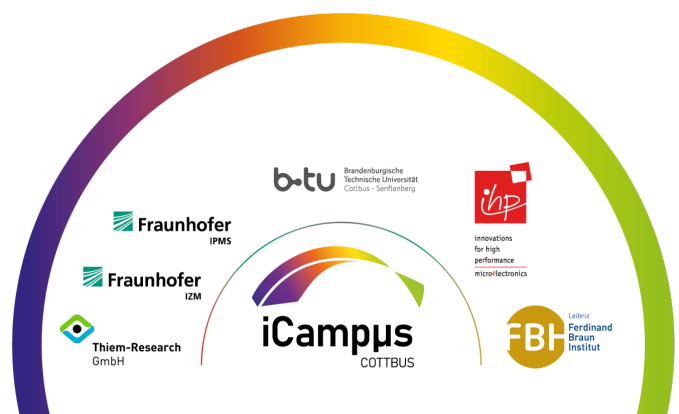
Reduce development risks and costs through shared resources and expertise in the research consortium, enhancing your competitiveness.

4. Market Access and Growth

Capitalize on growing market opportunities in contactless monitoring and improve your market position with innovative products.

5. Technological Synergies

Leverage synergies across various disciplines to develop efficient and effective systems applicable in healthcare and industry.



Join us in shaping the
future of contactless
ultrasound monitoring!

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