

TECH OFFER

Privacy First Spatial and Behavioural AI for Smart Spaces



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Sensors & Instrumentation

Green Building - Sensor, Network, Building Control & Optimisation

Infocomm - Smart Cities

TECHNOLOGY READINESS LEVEL (TRL): TRL6

COUNTRY: HONG KONG

ID NUMBER: TO175144

OVERVIEW

The adoption of Artificial Intelligence (AI) solutions in smart buildings is increasing due to the numerous benefits it brings, from sustainability to energy savings to safety and wellbeing. Due to this, there have been a proliferation of cameras or wearables deployed. However, due to this, there is a growing pushback due to these technologies being invasive to privacy and the user's way of life. Current non-invasive to privacy vision solution have limited precision in distinguishing multiple objects within a 3D area, reducing their potential integration to current smart solutions.

The technology owner has developed an innovative solution to overcome the issues above through the use of advanced infrared thermal array sensors combined with AI-driven analytics software for contactless and continuous monitoring of human activities while preserving privacy. The intelligent spatial and behavioural sensing solution is able to enable multi-user detection with their respective range while maintaining privacy of all users within a 3D space. This results in a modular solution which provides higher

precision, more energy efficient and easier integration compared to other traditional thermal sensing cameras.

The technology owner is looking for collaborative partners, including smart building facilities providers and IoT technology integrators, which require a sensing solution which prioritises privacy of users first while ensuring complete functionality of detection and range within a 3D space.

TECHNOLOGY FEATURES & SPECIFICATIONS

This innovative solution is an integration of numerous technologies including:

1. Low-resolution thermal (infrared) array sensors
2. Advanced proprietary sensor fusion algorithms
3. Edge AI computing capabilities
4. Spatial intelligence platform

The key feature from this solution includes:

- Privacy-preserving sensing without camera
- Multi-user detection with range perception
- Contactless and continuous monitoring
- Edge computing for efficient data processing
- AI-driven behavioural analytics
- Real-time activity detection and analysis

POTENTIAL APPLICATIONS

Smart Buildings: Optimisation of various aspects of building management and occupancy experiences with privacy-first in mind. These includes:

- Space utilization optimization
- Occupancy mapping
- Energy management
- Meeting room management
- Employees experience enhancement
- Safety and emergency response
- Cleaning and maintenance optimization

Eldercare, Healthcare: Enhancement of quality of care and safety of anonymised individuals, particularly elderly, that enables monitoring for health analysis and timely notification for intervention. These includes:

- Fall detection
- Sleep monitoring
- Bathroom visit analysis
- General activity tracking

UNIQUE VALUE PROPOSITION

This modular technology solution adopts a **privacy-first** approach, ensuring user privacy while maintaining comparable high sensing accuracy, unlike camera-based systems. The low-cost infrared array sensing solution enables multi-user detection and ranging while being energy efficient, outperforming traditional thermal cameras. It is contactless and non-intrusive, eliminating the need for wearable devices, which improves user comfort and long term compliance. Additionally, with its modular design, the solution can be integrated easily, making large-scale deployment more economical than traditional sensing solutions.

With edge AI computing, it enables real-time processing and reduces cloud dependency, enhancing data security and reducing latency. This technology also offers comprehensive spatial intelligence, providing deep insights into space utilisation and human behavioural patterns, supporting data-driven decision-making for space management and executing timely care provision.