Hybrid VLC/IR-RF

Visual Light Communication/ InfraRed-Radio Frequency

The project will target the building block actors by developing a hybrid VLC/IR-RF (Visual Light Communication/ InfraRed-RadioFrequency) system based on an innovative integrated multi-functional thermal image sensor module with highly sensitive, low cost, and low power consumption.

The implementation of a VLC system can provide users with a large number of possible applications. The most common requirement is the need to provide wireless access to the Internet for electronic devices at a specific location. If the installed light bulbs are replaced by LEDs and VLC systems, Internet access could be quickly provided through the visible light spectrum.

Hybrid VLC/IR-RF Communication for Smart Space Based on Multi-Functional Thermal Image Sensor Module

This module will be capable of multi-purpose sensing for the monitoring of the energy consumption and control the environment in houses, buildings, and offices, which could avoid the privacy issues with ultra-low resolution (80x80) micro-bolometer, including presence detection, motion detection, and non-contact temperature detection.

The goal is to develop a multi-functional module with the smallest and smartest infrared design from a single compact sensor.

Furthermore, the proposed VLC/IR-RF system will be able to integrate existing sensors to detect the physical and chemical information at home, office and in any other building.

The module will be able to run an image processing algorithm based on artificial intelligence with low computation and energy requirements, enabling counting of persons or objects, tracking, and distinction of objects such animals.

Partners: Romania, Korea

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