Complete turnkey solution for Smart presence detection with advanced algorithms using Time-of-Flight (ToF) sensors
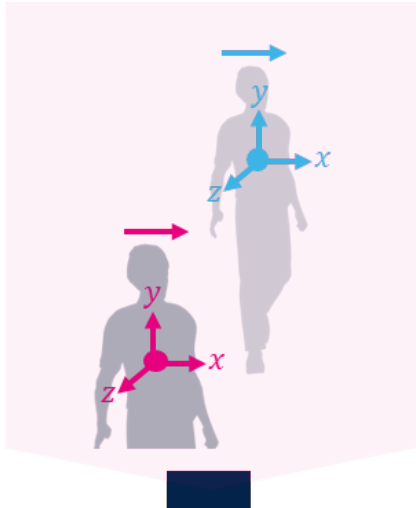
Features

- The STSW-IMG048 is a complete turnkey solution that includes the following features:
  - Wake on approach
  - Walk away lock
  - Passing-by filter
  - Wake on stop
  - Multi-human tracking
- To make it easy to use and customize these advanced algorithms, the technical package also includes:
  - Ready-to-use application code
  - User guide available directly in the software package
  - Technical application note
- The package supports two FlightSense products:
  - VL53L7CX, ToF, 8x8 multizone ranging sensor, with 90-degree FoV
  - VL53L8CX, low-power high-performance 8x8 multizone ToF sensor
- The smart presence detection based on FlightSense technology offers several benefits:
  - Full privacy, no image, and no camera module
  - Power savings and extended display lifetime
  - Real distance measurement
  - Independent of target reflectance
  - "All-in-one sensor" is easy to integrate, and can be hidden behind a dark cover glass
  - Low power consumption and ease of integration in any architecture

Product status link
STSW-IMG048

Applications

- Home appliances and home automation:
  - Kitchen appliances (such as coffee machine, cooking plates, ovens, and stove tops)
  - Smart home (thermostats, control panels, and more)
  - Smart lighting
  - Smart lock and security camera
  - Service robot and virtual assistant
- Other:
  - Industrial robots and human machine interface
  - Entertainment with educational robots, treadmill, ...
  - Automated teller machine (ATM)

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Description

Smart presence detection (SPD) is an innovative technology that uses motion detection to detect accurately the presence and position of people. This complete turnkey solution includes advanced algorithms that offer five features to enhance system efficiency and the user experience. Unlike standard ToF sensors that do not include advanced algorithms, ST's SPD solution is able to track a person's position, filter passing-by movement, wake the system up when someone steps in front of the device, and distinguish immobile humans from objects.

Thanks to easy-to-use tuning parameters, the solution can be customized to meet the needs of a wide range of applications and end products. It perfectly fits home appliance devices like fans, cooking plates, or ovens. In public places, it could ensure user safety at ATMs, assist in face identification, create tomorrow's advertising panels with human tracking, and more.

Based on ST's fourth generation of FlightSense sensors, the STSW-IMG048 software package can work with two 8x8 multizone Time-of-Flight sensors: the VL53L7CX or the VL53L8CX, using the same and unique software. Using a turnkey solution based on FlightSense technology provides full privacy as it uses ST's ToF sensors to compute distance information without the need for a camera module. The solution's performance is not affected by target reflectance, making it suitable for use in low light conditions. The sensors are small and can be easily integrated and hidden behind a dark cover glass. The smart presence detection solution can be combined with the turnkey gesture recognition solution based on the same sensors.

The package includes libraries for supported Arm® Cortex® cores, example code for the NUCLEO-F401RE board, and an easy-to-read Quick Start guide. The application can run on microcontrollers that are based on Linux, Android, Cortex® M0+, M3, M33, M4, and M7. To run the GUI, a Nucleo expansion board (X-NUCLEO-53L7A1, X-NUCLEO-53L8A1) is required, with a NUCLEO-F401RE Nucleo board. In addition, you can use the breakout boards (SATEL-VL53L7CX or SATEL-VL53L8) connected to the STM32 Nucleo board.

Revision history

Table 1. Document revision history

Date	Version	Changes
29-Mar-2024	1	Initial release
10-Apr-2024	2	Improved text clarity.

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