

Infineon and pmd present hybrid Time of Flight (hToF): Advanced technology for next-generation smart robots

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January 29, 2024 – In collaboration with device manufacturer OMS and pmdtechnologies, an expert in Time of Flight (ToF) technology, Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) has developed a new high-resolution camera solution that enables enhanced depth sensing and 3D scene understanding for next-generation smart consumer robots. The new hybrid Time of Flight solution combines two depth sensing concepts and helps significantly reduce maintenance effort and costs for smart robots.

Infineon's REAL3™ flexible ToF imager technology enables the combination of established high-resolution iToF flood illumination and dToF long-range spot illumination in a single hybrid Time of Flight camera. For many years now, this high-resolution technology has been used to see the smallest objects in the path of the robot and navigate around them. Adding precise long-range spot data now also allows creation of an accurate 3D map of the surrounding area for intelligent path planning experiences that empower the next-generation robot vacuum cleaner.

The new solution reduces the height of robot vacuum cleaners by 20-30%, fully replacing the top-mounted LDS (Laser Distance Scanner) making it possible to clean even under furniture with low clearance. Measuring only 31x16x8 mm, hybrid ToF camera requires much less space for improved mapping and obstacle avoidance functionality. Making multiple sensors redundant, hybrid ToF reduces system costs as well as operation costs, since there are no moving parts that wear out over time.

The solution serves customers with a simplified and user-friendly approach to implementation. The compact hybrid ToF solution is versatile and robust and aligns well with the evolving needs of mobile consumer robot devices in various industries such as robot vacuum cleaners, commercial robots, air-purifiers and size measurement.

"The partnership with pmdtechnologies and OMS is a great example of how Infineon fosters technology innovation and digitalization together," said Andreas Kopetz, Vice President Ambient Sensing at Infineon. "Our hybrid ToF solution caters to a rapidly expanding consumer robotic market with a wide array of applications and makes it possible for customers to come up with unique robot designs, on top of reduced system costs and complexity by one camera replacing multiple."

Pioneers from the very beginning.

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“Infineon and pmdtechnologies’ hybrid ToF adopts an innovative patent architecture and is paired with dual illumination,” said Eden Xiao, General Manager, Jiangxi OMS Microelectronics Co., Ltd. “For a manufacturer like OMS, the solution has exceptional advantages such as small size, low power consumption, and a reduction of overall application cost. We are excited to utilize the unique optical design scheme that avoids multipath problems and achieves a combination of precise positioning and obstacle avoidance, further enhancing the competitiveness of hybrid ToF camera products.”

About pmdtechnologies ag

pmdtechnologies ag, a fabless IC company headquartered in Siegen, Dresden and Ulm/Germany with subsidiaries in the USA, China and Korea, is the worldwide leading 3D Time-of-Flight CMOS-based digital imaging technology supplier. Started up in 2002, the company owns over 450 worldwide patents concerning pmd-based applications, the pmd measurement principle and its realization. Addressed markets for pmd's 3D sensors are industrial automation, automotive and the wide field of consumer applications like smartphones.

Further information is available at pmdtec.com.

About Infineon

Infineon Technologies AG is a global semiconductor leader in power systems and IoT. Infineon drives decarbonization and digitalization with its products and solutions. The company has around 58,600 employees worldwide and generated revenue of about €16.3 billion in the 2023 fiscal year (ending 30 September). Infineon is listed on the Frankfurt Stock Exchange (ticker symbol: IFX) and in the USA on the OTCQX International over-the-counter market (ticker symbol: IFNNY).

Further information is available at <https://www.infineon.com>

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