3D Sensing and Imaging Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 120 pages | Mordor Intelligence

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Report description:

The 3D sensing and imaging market is expected to register a CAGR of 23.8% over the forecast period. Increasing the adoption of sensors in various industry verticals has led to the development of 3D technology that can gauge shapes in real-time. Instruments that were once bulky are now miniaturized due to advanced technologies.

Key Highlights
The home gaming industry offered one of the first practical applications of 3D sensing for consumers, with time of flight (ToF) sensors capturing the movements and gestures of players to create a new interactive gaming experience.
However, the arrival of 3D sensing is most noticeable in today's smartphone technology. User-facing 3D scanning enhances security through facial recognition, while world-facing 3D sensing creates new opportunities for high-performance depth-sensing photography and augmented reality.
The automotive industry, which once seemed like an unlikely beneficiary of 3D sensing technology, is currently featuring advanced driver-assistance systems (ADAS) and autonomous vehicles enabled by 5G and the IoT, making 3D sensing a crucial part of transportation safety. Additionally, the LiDAR systems offer short- and long-range 3D sensing that enables vehicles to independently assess their surroundings in real time.
For instance, in February 2021, LeddarTech, a prominent player in Level 1-5 ADAS and AD sensing technology, announced the availability of Leddar PixSet, a sensor dataset for ADAS and autonomous driving research and development.
Just as CMOS sensors have replaced CCD devices, the emergence of newer, niche-based imagers is expanding the functionality of machine vision applications. Major applications of these systems in the automotive sector are quality inspections and machine guidance. Moreover, various machine vision technologies are being deployed in automotive inspection applications. This includes 3D imaging, multi-camera systems, barcode reading, smart cameras, and line scan cameras.
In terms of technology, the growing adoption of time of flight, structured light, and stereoscopic vision across industries is driving

the market's growth. For instance, stereoscopic vision technology is used in bullet cameras installed for monitoring people's movement at door entrances and other places. FLIR Systems (U.S) manufactures Stereo Vision cameras Systems with stereoscopic vision technology.
COVID-19 impacted the operations of multiple OEMs across the globe that were involved in various stages ranging from production to R&D. The 3D sensing market for consumer and industrial applications was negatively affected during the COVID-19 pandemic due to the decline in the consumer spending trends, which led to the macro slowdown of the economy all over the globe. However, the increasing adoption of 3D sensing and imaging technology in smartphones and gaming consoles is expected to increase the demand for 3D sensing and imaging technology applications in the market.

3D Sensing & Imaging Market Trends

Automotive Sector Expected to Drive Market Growth

Capturing a wide range of data, from what is happening hundreds of meters down the road to how vigilant the driver is, is required to create a comprehensive 3D map of the environment and the things inside it. LiDAR (light detection and ranging), which captures more detailed information and provides more accuracy than classic scanning-based sensors like radar and camera-based imaging, is one of the major technologies for long- and short-range scanning.
LiDAR is primarily used for advanced driver assistance systems (ADAS) in automobiles for the driver's convenience, with a human-machine interface for safe guidance and smooth operation. The autonomous nature of the vehicle needs considerably high accuracy and assistance for obstacle detection for avoidance and safe navigation through the roadways.
Using LiDAR in robotic vehicles means using multiple LiDAR systems to map the vehicle's surroundings. The adoption of LiDAR is necessary for a high level of redundancy between sensors to ensure the safety of the passengers. Robotic vehicles have the highest possible requirement of human interaction and are generally more advanced than autonomous cars with ADAS systems. The proper development of completely autonomous or robotic vehicles for passengers is still in development, and LiDAR is expected to play a huge part in that.
In Feb 2022, Mercedes Benz announced its partnership with Luminar Inc for the supply of LiDAR for its autonomous driving systems. The partnership will help the automaker accelerate the development of its future automated driving technologies. Such developments from the automotive vendors are further strengthening the market growth.
According to the National Highway Traffic Safety Administration (NHTSA), from levels three to five of autonomous driving, an automated driving system should be able to monitor the driving environment with minimal or no human interaction. The current Euro NCAP (European New Car Assessment Programme) mandate for driver monitoring systems (DMS) is well on its way to becoming a European safety standard for next-generation vehicles in terms of in-cabin scanning.

North America Expected to Hold Major Market Share

North America is expected to hold a significant market share in the forecast period. The United States is the largest market in the region. The high demand from the consumer electronics and automotive sectors employs 3D sensors for multiple applications in their domains.
The growing investments in IoT in the region also aid the market's growth. As per a study published by ISE Magazine in 2021, the US government invested USD 140 billion in a broad range of federally funded R&D programs in FY 2020, including emerging technologies. IoT has been identified as one of the growing areas of federal R&D investments. The technology is now ranked as strategically important by many major US Federal agencies that focus on increasing competitiveness, economic prosperity, and national security.

Also, the gaming industry in the country has been recording steady growth due to customers spending more time at home and the huge developments in gaming equipment in recent years. The United States has one of the largest markets in the gaming industry, ranking only behind China. AR/VR devices, handheld joysticks, and other gaming equipment widely use 3D sensors and 3D imaging cameras for on-screen interactions.
Further, American tech giant Apple's AR headset is expected to launch in 2022 and will reportedly feature powerful 3D sensors. These sensors are said to be more advanced than the ones used in iPhones and iPad for Face ID. Also, the 3D sensors are said to get an increased field-of-view (FOV), likely improving object detection.
Canada is another significant 3D sensing and imaging market, owing to the increasing adoption of advanced technologies in the entertainment, advertising, and medical industries. According to UniSoft, 71% of Canadian parents play video games with their children at least once a week, demonstrating the significant demand for gaming equipment in the region.

3D Sensing & Imaging Market Competitor Analysis

The 3D sensing and imaging market is a highly competitive market. With increased innovations and sustainable products, to maintain their position in the global market, many companies are increasing their market presence by securing new contracts by tapping new markets. Some of the key developments are:

February 2022 - STMicroelectronics, a semiconductor company, launched its new series of high-resolution Time-of-Flight sensors to provide advanced 3D depth imaging for smartphones and other devices. With the launch of the VD55H1 3D depth sensor, ST aims to strengthen its market position in the Time-of-Flight (ToF) product market and complement its full range of depth sensing technologies.
January 2022 - LIPS Corporation announced its new LIPS Corp., a provider of 3D solutions, announced the new LIPSedge S215/S210 3D Stereo Cameras at CES 2022, based on CV2 CVflow edge AI perception SoC from Ambarella, a company offering AI perception processing. The new LIPSedge S Series 3D Stereo Camera can support up to 4K high-resolution and feature wide FOV, long range, and high accuracy.
October 2021 - Lumentum Holdings Inc. introduced an industry-first 10 W flood illuminator module, which could integrate a high-performance three-junction vertical-cavity surface-emitting laser (VCSEL) array for industrial and consumer 3D sensing applications.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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