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Computer Vision Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028FSegmented By Component (Hardware, Software), By Product Type (Smart Camera-Based, PC-Based), By Application (Quality Assurance & Inspection, Positioning & Guidance, Measurement, Identification, 3D Visualization & Interactive 3D Modelling, Predictive Maintenance), By Vertical (Industrial, Non-Industrial), By Region and Competition

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Abstracts

Global computer vision market is expected to grow at a healthy CAGR during the forecast period. Computer vision is a branch of artificial intelligence that enables computers to see, understand, and process visual information. Computer vision is a versatile technology with applications in many domains such as healthcare, manufacturing, and retail. For example, it can be used to identify and verify people's faces from images or videos. This can be used for security purposes, such as facial recognition for access control or for social media applications, such as tagging friends in photos. Computer vision can help autonomous vehicles to perceive their surroundings, detect obstacles, traffic signs, pedestrians, and other vehicles, and navigate safely and efficiently. Computer vision can assist doctors and radiologists in diagnosing diseases, detecting tumors, measuring organs and tissues, and performing surgeries. It can enhance the real world with digital information, such as graphics, sounds, texts, and videos, which can be used for gaming, education, tourism, and more. Computer vision can enable robots and machines to perform tasks that require visual inspection, such as

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quality control, defect detection, sorting, and packaging. Computer vision is a challenging field that requires solving many complex problems. One of the most challenging problems is capturing high-quality images or videos from cameras or sensors. This is because the images or videos can be affected by factors such as lighting, noise, distortion, and occlusion. Computer vision systems need to pre-process the images or videos to enhance their quality, reduce their size, and extract useful features for further analysis. Computer vision systems need to interpret the images or videos using various methods, such as segmentation, classification, detection, recognition, and tracking. Computer vision systems need to understand the meaning and context of the images or videos using techniques such as scene understanding, object recognition, face recognition, and natural language processing. Computer vision is a rapidly evolving field that relies on many technologies and tools, such as machine learning, deep learning, and image processing. Deep learning is a subset of machine learning that uses artificial neural networks to learn from large amounts of data and perform complex tasks. Deep learning has been widely used for computer vision tasks such as image classification, object detection, and face recognition. OpenCV is an open source that provides a comprehensive set of functions and algorithms for computer vision. OpenCV supports various programming languages such as C++, Python, and Java, and can run on various platforms such as Windows, Linux, and Android. TensorFlow is an open source provides a platform for building and deploying machine learning models. TensorFlow supports various programming languages such as Python and C++, and can run on various devices such as CPUs, GPUs, and TPUs. Computer vision is a fascinating and important field that has many benefits for society and humanity. However, computer vision also poses some ethical and social issues that need to be addressed carefully. For example, computer vision can invade people's privacy by capturing their faces, locations, activities, and preferences without their consent or knowledge. This can lead to identity theft, surveillance, abuse, or discrimination. Computer vision can be biased by the data it is trained on or the algorithms it uses. This can result in unfair or inaccurate outcomes for certain groups of people based on their gender, race, or age. Computer vision can have significant impacts on people's lives and well-being.

Rapid Advancements Made in Robots Using Vision-guided Systems Is Fueling the Market Growth

Computer vision is a field of artificial intelligence (AI) that enables computers and systems to derive meaningful information from digital images, videos, and other visual inputs and take actions or make recommendations based on that information. One of the most promising and innovative applications of computer vision is in robotics. Robots

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can use computer vision to perceive their surroundings, recognize objects, navigate autonomously, manipulate items, and perform complex tasks. Vision-guided systems are a type of computer vision technology that allow robots to interact with their environment using cameras and sensors as inputs. Vision-guided systems can be classified into two categories: 2D and 3D. 2D vision-guided systems use conventional cameras to capture images of the scene and process them using algorithms to detect features, edges, shapes, colors, etc. 2D vision-guided systems are suitable for tasks that require simple object recognition and alignment, such as picking and placing items on a conveyor belt. 3D vision-guided systems use stereo cameras, structured light, or laser scanners to capture depth information of the scene and create a 3D model of the environment. 3D vision-guided systems can handle more complex tasks that require accurate object detection, localization, orientation, and pose estimation, such as assembling parts or de-palletizing boxes.

One example of a 3D vision-guided system is the 3D vision-guided robotics system from KEYENCE, which is designed for unparalleled object detection capability and ease-of-use. This system can be used in the automation of assembly, de-palletizing, and machine tending processes. To gather 3D data, the four-camera, one-projector imaging unit captures 136 total images as the high-speed projector emits multiple striped-light patterns across the target. The user follows a simple setup process, including automatic robot-camera calibration.

Vision-guided systems enable robots to perform tasks that were previously impossible or impractical for humans or machines. They also reduce the need for expensive and time-consuming fixtures, templates, or markers that are used to guide robots in traditional methods. Vision-guided systems can adapt to changes in the environment or the task without requiring manual intervention or reprogramming. Vision-guided systems also improve the quality and consistency of the output by minimizing errors and defects.

As robots become more intelligent and capable with the help of computer vision, they will be able to take on more roles and responsibilities in various domains. This will create new opportunities and challenges for businesses and consumers alike. Vision-guided systems are not only fueling the market for computer vision but also transforming the future of robotics.

Rising demand for EVs is Driving the Market Growth

As EVs become more popular, computer vision is playing an increasingly important role in their development. Computer vision can be used for a variety of applications in EVs,

such as autonomous driving, driver assistance, safety, navigation, and entertainment. One of the main factors that is driving the demand for computer vision in EVs is the need for autonomous driving. Autonomous driving refers to the ability of a vehicle to operate without human intervention, using sensors, cameras, and software to detect and respond to the surrounding environment. Autonomous driving can offer many benefits for EVs, such as reducing emissions, improving efficiency, enhancing safety, and saving time and money. Another factor that is boosting the demand for computer vision in EVs is the need for driver assistance. Driver assistance refers to the use of computer vision systems to assist drivers in various tasks, such as parking, lane keeping, collision avoidance, traffic sign recognition, and blind spot detection. Driver assistance can help improve the performance and safety of EVs, as well as provide convenience and comfort for drivers and passengers. A third factor that is fuelling the demand for computer vision in EVs is the need for safety. Safety refers to the use of computer vision systems to monitor and protect the vehicle and its occupants from various hazards, such as theft, vandalism, fire, and accidents. Safety can help prevent or mitigate damage and injury for EVs, as well as provide peace of mind and security for owners and users.

In conclusion, the rising demand for EVs is driving the global computer vision market. Computer vision has many applications in EVs that can offer various benefits for users and society. As technology advances and consumer preferences change, computer vision will play an increasingly important role in shaping the future of mobility.

Market Segmentation

Based on components, the market is segmented into hardware and software. Based on product type, the market is segmented into smart camera-based and PC-based. Based on application, the market is further bifurcated into quality assurance & inspection, positioning & guidance, measurement, identification, 3D visualization & interactive 3D modelling, and predictive maintenance. Based on vertical, the market is further split into industrial and non-industrial. The market analysis also studies the regional segmentation to devise regional market segmentation, divided among North America, Europe, Asia-Pacific, South America, and Middle East & Africa.

Company Profiles

Alphabet Inc., Cognex Corporation, Intel Corporation, Keyence Corporation, Matterport, Inc., National Instruments Corp., Omron Corporation, Sony Group Corporation, Teledyne Technologies Inc., and Texas Instruments Incorporated. are among the major

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players that are driving the growth of the global Computer Vision market.

Report Scope:

In this report, the global computer vision market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Computer Vision Market, By Component:

Hardware

Software

Computer Vision Market, By Product Type:

Smart Camera-Based

PC-Based

Computer Vision Market, By Application:

Quality Assurance & Inspection

Positioning & Guidance

Measurement

Identification

3D Visualization & Interactive 3D Modelling

Predictive Maintenance

Computer Vision Market, By Vertical:

Industrial

Non-Industrial

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Computer Vision Market, By Region:

Asia-Pacific

- China
- Japan
- India
- Australia
- South Korea

North America

- United States
- Canada
- Mexico

Europe

- United Kingdom
- Germany
- France
- Spain
- Italy

Middle East & Africa

- Israel
- Turkey

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- Saudi Arabia
- UAE

South America

- Brazil
- Argentina
- Colombia

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the global computer vision market.

Available Customizations:

With the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

- Detailed analysis and profiling of additional market players (up to five).

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