+357 96 030922
info@marketpublishers.com

Swarm Intelligence - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

https://marketpublishers.com/r/SC0DF7EFE591EN.html
Date: July 2024
Pages: 107
Price: US$ 4,750.00 (Single User License)
ID: SC0DF7EFE591EN

Abstracts

The Swarm Intelligence Market size is estimated at USD 58.5 million in 2024, and is expected to reach USD 271.20 million by 2029, growing at a CAGR of 35.90% during the forecast period (2024-2029).

Key Highlights

The market is driven by the application of artificial intelligence through the integration of biological behavior. Advancements in artificial intelligence, increasing automation, and the growing need for efficient data analysis are expected to drive market growth.

Factors such as the increasing demand for effective and innovative solutions, as well as technological development, primarily drive the growth of the swarm intelligence market. Additionally, the increased use in military and communications applications is expected to provide growth prospects for the market over the forecast period.

Swarm intelligence is inseparably linked to advanced technologies, resulting in synergies that increase their impact. For example, swarm robotics integrates with Internet of Things (IoT) devices, allowing for autonomous monitoring and control systems for smart cities, industrial automation, and environmental monitoring applications.

Artificial intelligence and machine learning also enhance the performance and resilience of swarm algorithms, allowing them to be more adaptive and intelligent. In particular, reinforcement learning techniques make it easier for swarm robotics systems to learn and adapt, resulting in improved performance and resilience in dynamic environments.

+357 96 030922
info@marketpublishers.com

However, market growth is challenged by the implementation, complexity of the design, and deployment costs associated with swarm-based systems. The development of swarm intelligence solutions necessitates complex algorithms that imitate the behavior of complex biological systems, creating a need for expertise in areas such as artificial intelligence, robotics, and control systems. Thus, acquiring and retaining specialized talent for designing, implementing, and managing these systems incur considerable costs.

The COVID-19 pandemic had a mixed impact on the swarm intelligence market, presenting challenges and opportunities. The supply chain disruption caused by the pandemic led to delays in the delivery of equipment required for the swarm intelligence systems, impacting projects, and the economic uncertainty led to cautious spending and investment decisions for swarm intelligence, resulting in a slowdown in innovation. Also, it has created opportunities for innovation and technological advancement in areas such as automation, remote monitoring, healthcare, and other applications.

Swarm Intelligence Market Trends

Transportation and Logistics Sector is Gaining Traction Due to the Emergence of an Optimization Algorithm

Intralogistics and collective transport are becoming increasingly popular, and early experiments with autonomous vehicles are showing promising results. At production sites and warehouse facilities worldwide, swarm logistics is gaining momentum as it enables the free movement of transport assistants in warehouses and other facility areas without restricting them to specific predefined linear movements.

The use of swarm intelligence for transport solutions at warehouses and production sites is rapidly increasing, and floor-based transport systems are being replaced (e.g., on conveyor belts, rails, or along induction tracks). Autonomous vehicles' benefit is that they can be used universally and reach their destinations individually.

In transportation, the increased operational costs for business, as well as high travel time, catered to the need for analytical models that can be solved using the swarm intelligence-based Ant Colony Optimization algorithm for optimizing the route, which is further projected to propel the studied market across the transportation sector over the forecast period.

The increasing benefit of intelligent transport solutions based on swarm intelligence is

+357 96 030922
info@marketpublishers.com

the resulting flexibility. The development and use of autonomous vehicles have reached a high level. The use of driverless intralogistics concepts and, thus, a shift toward swarm logistics are anticipated to revolutionize the entire industry in the coming years and signify the future of production sites and warehouses.

North America is Expected to be the Largest-growing Market During the Forecast Period

The use of automatic movers in transport systems is growing rapidly in the region. Thus, automated material handling solutions providers are adding an autonomous dolly mover to their range of intelligent transport systems controlled by its proprietary X-Swarm intelligence and targeting a new area of applications, such as the transport of small load carriers.

For instance, in January 2023, AGILOX expanded its autonomous mobile robots (AMRs) range with the new Omnidirectional Dolly Mover AGILOX ODM. The intelligent AMR is based on the AGILOX X-SWARM technology and offers new applications and other industry segments where small load carriers, which the new AGILOX ODM is designed to transport, are widely used, especially in the electronics and pharmaceutical industries.

The United States has the most significant military budget and is launching swarm drones to alter how wars are conducted. Also, it is considered one of the major contributors to the growth of swarm intelligence across North America, which is attributed to the increased adoption of swarm-based drones in the military and defense services.

In May 2024, Tesseract Ventures was awarded an Other Transaction Agreement (OTA) by the US Special Operations Command (USSOCOM) for the development of an innovative drone technology, the Special Warfighter Assistive Robotic Machine (SWARM). This advanced system is set to enhance the operational capabilities of Special Operations Forces (SOF) through advanced surveillance and tactical response functionalities.

The region has the presence of leading artificial intelligence (AI) and robotics companies that are working on swarm intelligence applications, and the government’s support for research and development in the AI and robotics sectors is expected to drive

+357 96 030922
info@marketpublishers.com

market growth. Additionally, the growing demand for automation in various sectors, coupled with a culture of innovation, makes the region fertile ground for swarm intelligence adoption.

Swarm Intelligence Industry Overview

The swarm intelligence market is moderately competitive. It consists of a few major players. In terms of market share, some of the players currently dominate the market. However, with the advancement in behavioral intelligence, new players are increasing their market presence, thereby expanding their business footprint through investment, mergers, acquisitions, and collaboration across emerging economies.

July 2023: Swarm, the Internet-of-Things connectivity provider acquired by SpaceX, announced that it would no longer be selling new devices and would continue to support ongoing VHF communications between Earth and space using its SwarmBEEs satellite constellation.

May 2023: Firestorm Labs, the developer of the first completely modular unmanned aerial system (MUAS) to deliver affordable mass to the modern battlefield, formed a partnership with AI autonomy company EpiSci to develop attritable drone swarming solutions.

Additional Benefits:

The market estimate (ME) sheet in Excel format

3 months of analyst support

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Swarm Intelligence - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

Product link: https://marketpublishers.com/r/SC0DF7EFE591EN.html

Price: US$ 4,750.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/SC0DF7EFE591EN.html