AI & Robotics in Aerospace & Defense Market to Hit $35.9 Bn by 2031 at 7.9% CAGR

AI & robotics are transforming aerospace & defense with smarter decision-making, automation, and mission-ready capabilities driving rapid global adoption.

WILMINGTON, DE, UNITED STATES, December 10, 2025 /EINPresswire.com/ -- According to a new report published by Allied Market AI and Robotics In Aerospace And Defense Market Size, Share, Competitive Landscape and Trend Analysis Report, by Type (Hardware, Software, Services), by Application (Military, Commercial, Space): Global Opportunity Analysis and Industry Forecast, 2021 - 2031, The global artificial intelligence and robotics in aerospace and defense market size was valued at USD 17.2 billion in 2021 and is projected to reach USD 35.9 billion by 2031, growing at a CAGR of 7.9% from 2022 to 2031.

The Artificial Intelligence (AI) and Robotics in Aerospace and Defense Market is experiencing accelerated growth as governments and private defense contractors adopt next-generation automation and data-driven technologies. AI-enabled platforms are now central to improving mission planning, enhancing situational awareness, and enabling predictive maintenance across aircraft, satellites, and defense systems.

Rising geopolitical tensions, increasing defense modernization programs, and the need for faster, autonomous decision-making are pushing militaries and aerospace agencies to integrate AI-powered robots, unmanned systems, and intelligent analytics. These technologies not only reduce operational costs but also enhance mission safety by taking over high-risk and repetitive tasks.

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One of the key drivers of the market is the adoption of autonomous unmanned aerial vehicles (UAVs), unmanned ground vehicles (UGVs), and unmanned underwater vehicles (UUVs), which rely heavily on AI algorithms for navigation, surveillance, and threat recognition. Defense agencies are increasingly prioritizing unmanned operations to reduce human risk and expand mission capabilities.

Another major growth factor is the integration of AI into cybersecurity and threat detection

systems. With the rise in digital warfare and cyberattacks targeting critical aerospace networks, AI-powered systems offer real-time anomaly detection and rapid response capabilities, ensuring operational continuity.

Robotics is also reshaping aircraft manufacturing and maintenance by increasing precision and reducing downtime. Automated inspection robots, collaborative robotic arms, and AI-enabled quality control systems are boosting efficiency in production lines and improving safety outcomes.

Additionally, the surge in space exploration initiatives by both government space agencies and private companies is creating opportunities for AI-driven satellite management, autonomous space robotics, and remote operational capabilities beyond Earth's orbit.

Despite rapid growth, the market faces challenges including high deployment costs, talent shortages in advanced robotics and AI engineering, and concerns over data security and ethical use of autonomous weapons. However, ongoing R&D investments continue to mitigate these challenges.

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The AI and Robotics in Aerospace and Defense market is segmented by technology (Machine Learning, Computer Vision, Natural Language Processing, Robotics, Autonomous Systems), application (Surveillance & Monitoring, Combat Operations, Logistics & Support, Manufacturing, Cybersecurity), platform (Air, Land, Sea, Space), and end-users (Defense Agencies, Aerospace Manufacturers, Space Organizations). Autonomous systems and robotics are expected to lead growth due to rising UAV deployments and automation in defense operations.

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North America dominates the market due to strong defense budgets, early technology adoption, and leading aerospace manufacturers integrating AI and robotics into both military and commercial aviation systems. The U.S. Department of Defense and NASA continue to invest heavily in autonomous capabilities, strengthening regional leadership.

Asia-Pacific is expected to witness the fastest growth, driven by increasing defense modernization in China, India, Japan, and South Korea. Europe also remains a significant contributor, supported by collaborative defense programs and rising investment in AI-enabled security technologies. Emerging markets in the Middle East are adopting robotics and AI for border security, surveillance, and aerospace expansion.

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The market players operating in the artificial intelligence and robotics in aerospace and defense market report include Airbus SE, IBM Corporation, Boeing Company, GE Aviation, Thales Group, Lockheed Martin Corporation, Intel Corporation, Raytheon Technologies Corporation, General Dynamics Corporation, and Microsoft Corporation. These major players have adopted various key development strategies such as business expansion, new product launches, and partnerships, which help to drive the growth of the AI and robotics in aerospace and defense industry globally.

The report delivers an in-depth evaluation of the global Artificial Intelligence and Robotics in Aerospace and Defense Market by examining its key segments, market statistics, evolving trends, and overall market dynamics. It provides a detailed assessment of the current landscape while highlighting emerging technologies, strategic developments, and growth opportunities that are shaping the future of the industry. In addition, the study outlines major investment avenues and profiles leading players driving advancements in AI-powered aerospace and defense systems.

The analysis also addresses the challenges and restraints that could impede market expansion, offering a balanced perspective on potential hurdles. Furthermore, the report incorporates Porter's Five Forces analysis to provide insights into competitive intensity, supplier and buyer power, risks posed by new entrants, and the impact of substitute technologies—delivering a comprehensive outlook on the market's competitive structure and long-term growth trajectory.

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- Based on type, the software sub-segment emerged as the global leader in 2021 and is anticipated to be the fastest growing sub-segment during the forecast period.
- Based on application, the military sub-segment emerged as the global leader in 2021 and is predicted to show the fastest growth in the upcoming years.
- Based on region, the North America market registered the highest market share in 2021 and is projected to maintain the position during the forecast period.

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