

# COLLABORATIVE MIND SENTINELS

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## ABSTRACT

The project of implementing artificial intelligence in the management of ground, aerial, and submarine robots is of great importance. This innovative system allows for efficient collection and management of information from the environment, collaboration and transmission of information, as well as collective learning. Used in exploring unknown areas, search and rescue operations, agriculture, and alternative communication systems, the project brings significant advantages in critical areas for the development of society. This advanced technology promotes safety, efficiency, and progress in research, facilitating smart solutions to complex challenges in the world.

## KEYWORDS

Collaborative systems,  
Collective learning,  
Swarm robots

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## INTRODUCTION

The innovative system allows for efficient collection and management of information from the environment, collaboration and transmission of information, as well as collective learning. The project brings significant advantages in critical areas for the development of society, such as exploration of unknown areas, search and rescue operations, agriculture, and alternative communication systems. The benefits of implementing artificial intelligence in robot management include:

- **Increased efficiency:** AI can automate repetitive tasks, improving efficiency and productivity in various industries.
- **Improved decision-making:** Robots integrated with AI and ML algorithms can make informed decisions based on data analysis, resulting in better overall performance.
- **Adaptability:** Robots integrated with AI and ML technologies can quickly adapt to evolving work conditions and tasks, making them useful in a wider range of industries and applications.
- **Improved safety:** Robots can perform all tasks, eliminating the risk of human error and injury in hazardous environments.
- **Data analysis and insights:** AI algorithms can analyze large data quickly, providing valuable insights for decision-making.
- **Collaboration and collective learning:** AI and ML-powered robotics allow for efficient collection and management of information from the environment, collaboration and transmission of information, as well as collective learning.

In conclusion, implementing artificial intelligence in robot management brings several benefits that can improve the efficiency, productivity, and safety of various industries.

## RESULTS

Two quadruped spider robots, that can coordinate as a swarm, can work together to complete tasks more efficiently than a single robot. They can divide tasks between them, work in parallel, and communicate with each other to optimize their performance. There is an increased adaptability as a swarm, they can adapt to changing environments and tasks. As a collective learning system, they can learn together and share knowledge to improve their capabilities, they can develop new strategies and approaches to tasks based on their collective experiences.

