



Biologically-Inspired Robots

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Introduction

Biologically-Inspired Robots are machines designed to replicate the behavior of living organisms. From insects to mammals, engineers have been inspired by natural systems to design robots that can perform tasks that are difficult or impossible for humans to do. This presentation will trace the evolution of biologically-inspired robots and predict their future impact on society.



Early Biologically-Inspired Robots

The first biologically-inspired robots were developed in the 1950s and 1960s. These robots were simple machines that imitated the behavior of animals. For example, the Shakey robot was designed to navigate through a room using a map and sensors. The Stanford Cart used cameras to navigate and avoid obstacles. These early robots set the foundation for future biologically-inspired robots.



Biological Inspiration

The design of biologically-inspired robots is based on the study of biology. Engineers look at the behavior, morphology, and physiology of animals to create robots that can perform similar tasks. For example, the VelociRoACH robot was inspired by the movement of cockroaches. The robot uses its legs to climb over obstacles and move quickly.



Applications of Biologically-Inspired Robots

Biologically-inspired robots have many applications in society. They can be used in search and rescue missions, agriculture, and even space exploration. The RoboBees, inspired by the behavior of bees, can be used for pollination and surveillance. The snake robot, inspired by the movement of snakes, can be used for inspection in hard-to-reach areas.





Challenges in Biologically-Inspired Robotics

One of the challenges in biologically-inspired robotics is replicating the complex behavior of animals. Animals have millions of years of evolution to perfect their behavior, while robots have only a few decades of research. Another challenge is creating robots that can adapt to their environment, like animals do. Robots need to have sensors and algorithms that allow them to learn and change their behavior.





Conclusion

Biologically-inspired robots have come a long way since the 1950s. They have many applications in society and are constantly improving. As technology advances, we can expect to see more advanced robots that can perform even more complex tasks. The future of biologically-inspired robots is exciting and full of possibilities.



Thanks!