

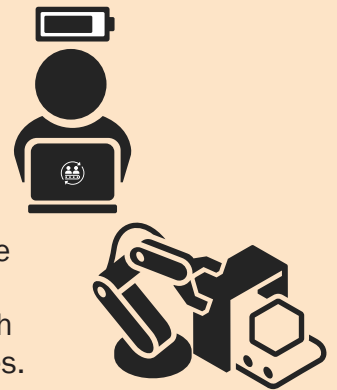
CONCEPT Debugging code refers to the process of identifying and fixing errors or “bugs” in the software that controls the robot. This involves examining the code to determine the cause of the problem. The goal of debugging is to ensure that the robot operates correctly and reliably, and to minimize the risk of errors that could cause damage or injury.

BACKGROUND

Debugging has been essential since the development of the first robots in the 1950s. As robots became more complex, debugging evolved from a manual process to using debuggers, simulators, and other tools. In the 1980s and 1990s object-oriented programming and the development of new debugging techniques specifically for robotics emerged. Today, debugging code in robotics remains a critical part of the software development process, with new techniques being developed to address the challenges posed by machine learning and AI.

APPLICATION

The DARPA Robotics Challenge was a competition held by the Defense Advanced Research Projects Agency (DARPA) in 2015 that challenged teams to develop humanoid robots capable of performing various tasks in disaster response scenarios, such as opening doors or turning valves.



REAL WORLD CONNECTIONS

When developing and coding a new drone model, crashes into obstacles are inevitable. A company’s engineers will repeatedly check and alter the code that controls the drone’s obstacle avoidance system. The process for debugging is: review the code that controls the drone’s obstacle avoidance system, looking for errors or inconsistencies, use simulation software to replicate the obstacle course and test the drone’s behavior in a virtual environment, use debugging tools, such as print statements or debuggers, to track down the source of the error, and modify the code to fix the problem.