

Robotic Movement and Efficiency: Examining Methods for Sensing, Learning, and Physical Travel

Zoey Pincelli, Honor Fournier, Salaheddine Lamsettef, with acknowledgements to Dr. Nigamanth Sridhar

CONCLUSIONS

Staying in the middle range of cost versus benefits--and focusing purely on data--it seems the most efficient robot would be one using a continuous track, a camera, and algorithm-based coding. This is certainly possible, but different environments will drastically change the requirements for a robot.

Abstract

The method of movement for a mobile robot is one of its most vital aspects, as it determines its efficacy in difficult terrains and environments like uneven, slippery, or sticky ground. This study will explore the differences and commonalities between the possible approaches for travel: articulating bipedal legs, articulating legs (quadrupedal or higher), continuous track, flippers (in the case of aquatic traversal), and traditional wheels, then how to actually navigate infrared, ultrasonic wave, cameras, or Wifi/Bluetooth. Waysto movementalsodiffer, as it can be coded rigidly or allowed to grow through trial and error. By comparing and contrasting methods and results, the most efficient approachvboth in general and for specific land and floor textures vcan be found.

Figure 2. The ANYmal a robot made for all terrains.