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

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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. Ways to ^ š Movement also differ, as it can be coded rigidly or allowed to grow through trial and error. By comparing and contrasting methods and results, the most efficient approach v both in general and for specific land and floor textures v can be found.

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 ^ µ • (µ c robot. _T EMC /P <</MCID 188>> BDC q 0.000ID . /

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

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