

Obstacle Avoidance with a Segway RMP

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ABSTRACT:

Robotic ground and aerial vehicles are becoming more of a vital part of the U.S. Army's modern warfighting capability every day. The ever-increasing load on the individual infantry soldier has prompted several studies into creating a semi-autonomous "mule" vehicle to relieve soldiers of some of their load.

This research seeks to design such a mule using a variant of an off-the-shelf Segway Human Transporter (HT) vehicle. This vehicle has built-in control algorithms which enable it to balance independently, and to accept steering input from a human passenger. The Robotic Mobility Platform (RMP) is a variant of the HT which balances independently and accepts steering information through serial ports.

This paper addresses the development of an obstacle avoidance capability in the Segway RMP. This capability was realized using a Sick scanning laser and a novel path-seeking algorithm implemented using LabView software.

Initial results for obstacle avoidance are discussed. In addition, plans for future work to create a follower capability in the RMP are delineated.

KEY WORDS: Robotics, Segway RMP, Obstacle Avoidance

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