

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Communications and Satellite Navigation Technology (2)

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CDGPS(CARRIER PHASE DIFFERENTIAL GPS) BASED NAVIAGTION SYSTEM FOR AN
AUTOMATED GROUND VEHICLE

Abstract

Precision controlled Automatic Ground Vehicles (AGVs) has received considerable attention in recent years since it can support a variety of highly-detailed missions that are unsafe or too difficult for human operation. In a number of navigation applications, GPS (Global Positioning System) has been utilized but it has had an extreme impact on high precision navigation, especially for AGVs.

In this paper, we propose Carrier Phase Differential GPS (CDGPS)-based AGVs system which employs a single inexpensive GPS receiver that can measure a vehicle's position within a few centimeters using a simplified vehicle model and a guidance algorithm. The proposed strategy has been successfully tested with a golf cart in a large field associated with three paths (straight, circle, curve), and consequently position error of 0.2m from a reference has been obtained.