Autonomous Underground Vehicles

This project is being conducted under the auspices of the CMTE. It is a joint project being carried out by our group (CMST Automation), CSIRO Exploration & Mining and the University of Sydney's Australian Centre for Field Robotics.

Introduction

LHDs and/or Trucks are the preferred means of transporting ore and dirt over short distances from pit to crusher or from drawpoint to orepass. The ore is usually transported over medium to long distances by conveyor or rail haulage. It is believed that automation of truck haulage would lead to significant cost improvements.

Previous Work

In March 1996 a joint CSIRO/University of Sydney (ACFR) team explored sensing options for underground truck and LHD navigation at Mt Isa Mines in Queensland. Data was collected from a number of sensors mounted on an LHD with the aim of determining which sensors performed best underground. This project led directly to the current AMIRA funded Autonomous LHD project (D394) described here.

Objectives

- Develop sensing and control systems using a combination of dead reckoning sensors, a mine map and laser scanners to keep the vehicle centred in the drive and to detect landmarks and obstacles.
- Integrate these systems into an operational underground autonomous vehicle.
- Trial the system on a purpose built test track at our lab and then at one or more of the sponsoring mines.

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