DRIVING SIMULATOR OF ALL-TERRAIN VEHICLES USING SCANER-STUDIO

M'Sirdi, Nacer Kouider
Organization(s): LSIS UMR 7296, France

Keywords

Driving Simulators; ATV Models; Grounds with unstabilities; Vehicle-Ground interactions; ATV Stabilization.

Abstract

The development of rescue robotics is gaining more and more interest. Rescue need often ATVs help in situations after earthquakes and other disasters by navigating through wreckage and ground regions that are too dangerous for people. Use of driving simulators to control the first ATV exploration and gathering information on missing persons and the surrounding conditions. Rapid advances in the development of remote driving, ATVs and robots, have been realized the last years. Robotized machines can play some vital roles in disaster relief.

The dynamic behaviour of an ATV is analysed and modeled. The Vehicle Model and Properties are emphasized. The ground interaction is studied and the energy interactions are characterized in order to be managed to maintain the system's stability.

The ground - wheels Contacts are modeled and analysed to deal with the motion control for ATVs.

All the developed models, need to be completed by on line observers and estimators to deduce the system states and the pertinents variables. Gathering these informations and learned features, we can design automatic systems for help to decision making and also for automatic driving to enhance the stabilty of the trajectories, increase the system safety and / or driving assistance. This can then be gathered or integrated to driving simulators.

This conference will be focused on how to deal with ATVs for driving simulation in extremal conditions, like for the rescue situations.