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Analysis of Cant Sensor Algorithm in Vehicles.

ABSTRACT - Masterthesis

The Cant (Inertial) sensor is a crucial component in electro-optical systems, weapon platforms, tactical vehicles etc., to provide precise vertical references. It determines the orientation of a body in three dimensional space, both stationary and moving. This helps in course correction of the vehicles, positioning of the weapon platforms onto the line-of-sight, etc. An accelerometer and gyroscope, combined using a filter, form the Cant sensor.

The accelerometer is stable over long periods of time but suffers from high noise. On the contrary, the gyroscope is resistant to noise but suffers drift. Both the components are combined using a Luenberger Observer in order to overcome the individual defects and provide angles related to Earth.

The aim of this study was to:

- Review currently existing algorithm basis and concepts developed from RDE

    o MATLAB / Simulink Models

    o Software implementation

- Analysis & Review of application scenarios

- Creating concept for optimization of SW

- Developing and testing with MATLAB Simulink

- Implementation of the algorithms

- Documentation of the above listed items.