Faculty of Electrical Engineering & Computer Science
Master Degree Course Electronics Engineering, MSc EE

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Master 2014

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Location Reference System for High-Speed Trains.

ABSTRACT - Masterthesis

A reliable reference localization system has to be built, which provides the exact location of a train. This reference system can be used for finding the location of the train, the distance travelled and the status of arrival or crossing of landmarks placed. Depending upon the speed as well as the location, the arrival of the train can be estimated accurately. This reference localization system has to meet the following base requirements:

1. The system should be reliable and the accuracy of locating consecutive landmarks should be 1 cm.
2. The system should have the ability to create a coding table, so that events that are recognized are handled according to the code.
3. The system should be capable of handling speeds up to 100 kph.
4. Graphical User Interface (GUI) on the PC should be made, which can display the landmark and log the events.
5. The mounting of sensors should satisfy the limitations of trains in Germany known as "Licht-Raum Profile".

The following secondary requirements are taken into account:

1. No additional active hardware should be used outside the vehicle.
2. A common physical port like RS232, Ethernet or USB should be available.
3. The system can contain a landmark which can be placed outside the train and it should not cause any potential threat.