https://ieeexplore.ieee.org/document/7810164/keywords#keywords

# An intelligent intrusion detection scheme for self-driving vehicles based on magnetometer sensors

**Publisher: IEEE**

Khattab M. Ali Alheeti; Klaus McDonald-Maier

**Abstract:**

Both safety and non-safety applications require authentication of messages and vehicles in cooperative vehicular ad hoc networks. Access control can prevent external attackers from achieving their goal of breaking or hacking important information from road side units and self-driving vehicles. However, internal attacks on vehicular systems and networks remain possible. A novel intelligent intrusion detection is proposed to secure the external communication system of self-driving and semi-self-driving vehicles. This system is based on the Integrated Circuit Metric technology, which has the ability to protect systems using features of the system itself. The detection system, called the ICMetric-IDS, is based on novel and unique features, which have been generated from bias values of magnetometer sensors as well as features which have been extracted from a trace file of simulated vehicle network traffic. Practical implementation and testing of the system demonstrate the efficiency in the detection of malicious behaviour.

**Published in:** 2016 International Conference for Students on Applied Engineering (ICSAE)

**Date of Conference:** 20-21 Oct. 2016

**Date Added to IEEE *Xplore*:** 09 January 2017

**ISBN Information:**

**INSPEC Accession Number:** 16583898

**DOI:** 10.1109/ICSAE.2016.7810164

**Publisher:** IEEE

**Conference Location:** Newcastle Upon Tyne, UK

**Keywords**

- Vehicles,
- Feature extraction,
- Security,
- Magnetic sensors,
- Magnetometers,
- Communication systems