Thesis Title: Cyber security for connected vehicles

Description of the Unit

The Security Lab group at RISE SICS is among the largest cybersecurity research groups in Sweden. The current research focus is on IoT security, cloud security, software security, formal methods, cryptography, standardization, privacy (technical and social aspects), and virtualization. Currently, the lab is involved in multiple research projects, funded by EU H2020, VINNOVA, Eurostars, Celtic-Plus, ECSEL, EIT, SSF, VR, and Swedish industry.

Thesis Description

Vehicles are becoming increasingly connected. Software updates and traffic congestion data are becoming common, and for vehicles with some degree of autonomous control, real time data can be of high importance. Because of the increased connectivity, the capability to correctly filter and enforce secure communication becomes crucial. Old models for vehicle communication become outdated. New solutions which satisfy new connectivity demands while still offering intrusion proof security are needed.

RISE SICS will provide background information and starting points for relevant requirements to consider. The work will be done as part of an ongoing project together with CEVT (owned by Geely which is also the owner of Volvo Cars). The tasks of the Masters student for this thesis are:

- Study state-of-the-art cyber security solutions, both specifically for vehicles and for normal internet usage.
- Dig deeper into solutions for firewalls for connected vehicles and related security standards.
- Specify, design, partially implement and evaluate a firewall that meets the identified requirements.
- Document the results as a thesis document.

Competence

We are looking for a bright MSc student with a background in cyber security, who has fulfilled the course requirements. Good programming skills are desired, as is good spoken and written English.

Application

Applications should include a brief personal letter, CV, and recent grades. Candidates are encouraged to send in their application as soon as possible. Suitable applicants will be interviewed as applications are received.

Start Time As soon as possible

Location RISE SICS Kista, Stockholm

Contact

Dr. Shahid Raza
Director Security Lab, RISE SICS
shahid.raza@ri.se

Joel Höglund
CSL, RISE SICS
joel.hoglund@ri.se