Template for thesis project proposals

Project Title	Connected Autonomous Vehicles in Confined Areas
Author(s)	*Student(s) name(s)*
Keywords	*Give 4-5 keywords*
Project description	Autonomous vehicles are expected to be widely employed in the future. That wireless communication between the autonomous vehicles and with infrastructure will be crucial seems obvious. However, it is not obvious how city planners must think to prepare for the technology shift with autonomous driving. Evaluation of different scenarios from a communications and infrastructure point-of-view is therefore needed as a step in the work towards being able to provide guidelines for cities and regions to to plan for an automated future. This master thesis project is connected to a planned EU Interreg project where the municipality of Varberg is also part. 1. Learn the architecture of Veins simulation platform (https://veins.car2x.org/) including commonly used microscopic traffic simulator SUMO. 2. Understand the basics of emerging V2X communication technologies (ITS-G5, LTE C-V2X) to support self-driving vehicles. 3. Identify typical mobility patterns of vehicles operating in the port of Varberg and model them in SUMO. 4. Identify possible scenarios and potentials to introduce self-driving vehicles in the port of Varberg. 5. Identify communication requirements to support self-driving vehicles in the port. 6. Perform system-level modeling of selected scenarios in Veins and evaluate the performance of the V2X network. 7. Assess the impact of introduction of autonomous vehicles on the operation of the port of Varberg.
References	J. E. Siegel, D. C. Erb and S. E. Sarma, "A Survey of the Connected Vehicle LandscapeArchitectures, Enabling Technologies, Applications, and Development Areas," in IEEE Transactions on Intelligent Transportation Systems, vol. 19, no. 8, pp. 2391-2406, Aug. 2018. doi: 10.1109/TITS.2017.2749459
Prerequisites	Data communication course(s) or similar; programming skills
Time frame	*Indicate start and duration of project*
Supervisor(s)	Magnus Jonsson, Alexey Vinel
Programme	*Name and the number of credits*
Examiner	Tomas Nordstrom
Signatures	*Student(s):* *Supervisor(s):* *Examiner:*