Measuring Complexity of Built Environments

MERGEN is a project in which we utilise smart technologies to measure and derive stress levels and cognitive load of people using biometric information. This means that we try to understand how drivers and pedestrians of semi-autonomous vehicle perceive their current situation based on measurements such as heart rate variability and eye movement.

**This aim of the thesis** is to investigate what type of key performance indicators (KPIs) that can be found to measure the complexity of an environment. This information will be used for the virtual simulation creation of future studies of the MERGEN project where we will measure how the brain of a driver is affected by their surroundings. The work will include:

* Creating virtual environments using Unity or Unreal Engine (tutorial will be provided by supervisor)
* Measuring how people are affected by these virtual environments (could be done in VR)
* Analysing the results from the different virtual environments and participants
* Determining what type of KPIs that can be used to describe complexity in an environment

**We seek one student or a team of two students,** preferably with a background in Human-Computer Interaction (HCI), Visualization, Game Design or other relevant computer science background.

The thesis work is hosted by Integrated Transport Research Lab (ITRL) at KTH. The thesis is part of an ongoing research project about creating a multi-purpose evaluation tool that can be used when developing new methods of interaction for semi-autonomous vehicles that will be controlled remotely. The project is collaborating with partners Arlanda, Ericsson, Scania and Trafikledning.

Depending on timing and results, you may also have the opportunity to write a scientific paper based on your work.

**Your application, including CV and a motivation letter, is welcome to** Robin Palmberg – robinpa@kth.se

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| Application deadline | 1st December 2019 |
| Selection process end | 16th December 2019 |
| Start period | January 2020 |
| End period | June 2020 |

**About Integrated Transport Research Lab - ITRL**

ITRL is a multidisciplinary and multi-stakeholder arena that brings together experts from various fields in order to contribute to the development of a sustainable transport system. The main research question is *How can new technology contribute to a sustainable transport system?ow How*

More information at: [www.itrl.kth.se](http://www.itrl.kth.se).