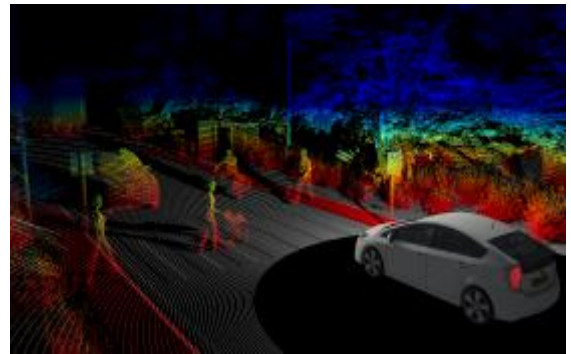
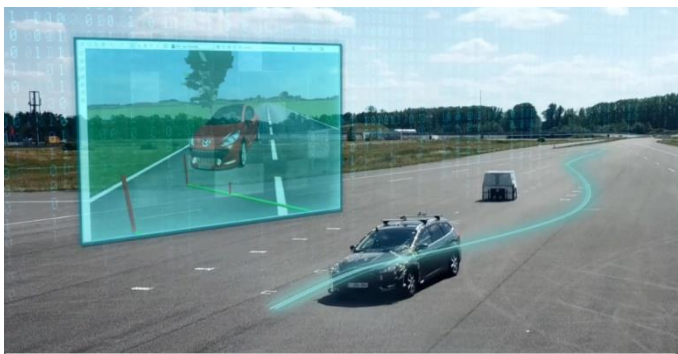


## Thesis/Internship Proposal

# Deep Reinforcement Learning Control for Autonomous Vehicle Driving

Autonomous driving that aim for more safety, comfort, and environmentally friendly vehicles, have been growing rapidly in automotive industry recently. Siemens PLM Software is developing the autonomous vehicle technologies from prototype to production at various levels: from chips, software algorithms and low-level integrated sub-systems, to sensor models, driving scenario simulation, and full vehicle-level simulation (<https://www.plm.automation.siemens.com//autonomous-vehicles.html>).



### Thesis Goal

In this project, we investigate deep reinforcement learning for autonomous vehicle control. The learning process is based on digital twin models of traffic environment, vehicle dynamics, and physic-based sensor (lidar, camera).

We are looking for outstanding students who are eager to do their Master thesis or Internship on a reinforcement learning (RL) topic for autonomous driving applications in a dynamic and international research environment. Examples of possible (but not limited to) topics:

- Traffic agents modelling and motion prediction
- Deep RL control, curriculum learning
- Transfer learning from simulation to physical vehicle control

The company provides various tools to support the research activities, for example, Siemens Prescan for sensor and traffic modelling, Amesim for vehicle dynamics modelling, autonomous vehicle setup for embedded control, and other autonomous driving platform for deep learning, sensor fusion implementations.

### Candidate profile

Background in machine learning, computer vision, robotics/control, and familiar with programming. Experience with ROS, OpenAI or autonomous vehicles is a plus.

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The work will be performed in collaboration with the R&D Team in Siemens Digital Industries Software, Leuven, Belgium.