PhD Candidate AI Supported Road Vehicle Suspension Design

Want to join us on our exciting journey?
Volvo Cars is on an exciting journey, redefining the automotive experience by innovating to make people’s lives less complicated. We offer you a once-in-a-lifetime chance to make an impact in a company with unique opportunities to grow and make a true difference.

What we offer?

The wheel suspension is one of the most architecture-heavy systems in a car and much of the car’s overall motion characteristics and limitations are determined by it. A clear bottleneck in the development of a new wheel suspension today is how to balance the complex performance requirements and which today require time-consuming calculations to evaluate for each iteration of the design. Current state-of-the-art methods in optimization have proved difficult to use in the design of a wheel suspensions because it is easily caught in local optima that do not work in practice. The experience is that we often devote more time to creating, constraining, and controlling the optimization than it typically takes to manually iterate to a solution.

Our working hypothesis is that by combining model-based knowledge of the connection between requirements and design parameters with modern Artificial Intelligence (AI) methods like such as Interactive Evolutionary Algorithms and Artificial Neural Networks, one can go directly from attribute requirements to a reduced solution space within which the designer can complete the design. This project will focus on suspension hard-points and bushing compliance design with new AI development methods that are based on the state-of-the art interactive evolutionary algorithms (IEA) developed by the participants of this project. In other fields IEA combined with human intelligence have been demonstrated to quickly reach new radical, unique, and optimized concepts. We believe that suspension design, with its nonlinear and multi objective requirements is a suitable, yet challenging application for which these methods could be further refined and find great usefulness. As far as we know, applying IEAs in this field has not been done before and a successful application to this problem should be original and therefore be scientifically and industrially relevant.

What you’ll do

The project will have both internal and external collaboration partners. At Volvo Cars, the PhD student will be part of Volvo Cars’ Industrial PhD Programme (VIPP). The project will also receive support from the Machine Learning and Artificial Intelligence Centre of Excellence at Volvo Cars which role is to make sure that Volvo Cars uses the potential of data and ML&AI to drive business value generation as well as to provide Data Science and Machine Learning education through the Volvo Cars School of Data Science. The project will also collaborate with the Chalmers AI Research Centre aiming
to build a strong regional ecosystem of AI research and industrial applications. International research cooperation and secondments at the Institute for Automotive Engineering (IFS) of the University of Stuttgart.

**Do you fit the profile?**

The strategic technical competencies required is a PhD candidate with a very strong technical and theoretical background in multi-body dynamics and mathematical modelling. The successful candidate should have the ability to turn abstract ideas into working concepts to understand and explain the connection between design requirements and design parameters using artificial intelligence and other methods. The successful candidate shall also have documented strong oral and writing skills in English. Proficiency in Swedish and German is also desirable.

**How to learn more and apply**

Please register your application as soon as possible, but not later than January 10th, 2021, selection will be running continuously. If you have questions about this position, you are welcome to contact Jenny Berglund at jenny.berglund@volvocars.com. For questions regarding the recruitment process, please contact Maria Westermark at maria.westermark@volvocars.com.

Please note due to GDPR we only accept application via our Recruitment Tool.

**Who are we?**

Everything we do starts with people. Our purpose is to provide freedom to move, in a personal, sustainable and safe way. We are committed to simplifying our customers’ lives by offering better technology solutions that improve their impact on the world and bringing the most advanced mobility innovations to protect them, their loved ones and the people around them.

Volvo Cars’ continued success is the result of a collaborative, diverse, and inclusive working environment. The people of Volvo Cars are committed to making a difference in our world. Today, we are one of the most well-known and respected car brands, with over 40,000 employees across the globe. We believe in bringing out the best in each other and harnessing the true power of people. At Volvo Cars your career is designed around your talents and aspirations so you can reach your full potential. Join us on a journey of a lifetime as we create safety, autonomous driving and electrification technologies of tomorrow.

Gothenburg, SE

**Job requisition ID:** 48648

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