VIRTUAL VEHICLE is a leading international R&D center for the automotive and rail industries. The center focuses on advanced virtualization of vehicle development. This linking of numerical simulations and hardware testing leads to a powerful HW-SW system design. About 300 people are now employed at our site in Graz - their expertise enables the efficient development of affordable, safe and environmentally friendly vehicles.

Master Thesis

"Conservative Couplings for non-iterative Co-Simulation"

Ref.Nr. E_146   **Master Thesis**

The coupling of different simulation tools and software is referred to as Co-Simulation. This multi-disciplinary approach is widely used in the automotive industry for analysis, design and development of vehicle system simulations. Parallel running Simulations are synchronised via data exchange at discrete time instants. Especially challenging are the integration of simulation based on conservation laws which typically occur in physics-based modelling approaches, as exemplarily used for electric circuit modelling and simulation. Within this Master-Thesis conservative couplings shall be investigated. The resulting methods needs to be demonstrated and analysed.

Your Tasks

- Literature research about conservative system modelling and simulation.
- Literature research about challenges for solving conservative systems.
- Identification of recent co-simulation approaches for integration of conservative systems.
- Elaboration of feasible coupling approaches and demonstration.
- Detailed discussion for possible extensions of an existing Co-Simulation platform.
- Set up academic examples for developing and testing the approach.

What we expect from you

- Student of electronics, physics, applied mathematics or mechanical engineering.
- Experience in modelling and simulation tools like Matlab/Simulink/Simscape or similar is favored.
- Experience with Matlab and/or Python for scripting as tools for analyzing the results is favored.
- Self-organized and motivated way of working.

What we offer

- Collaboration and contribution in an engaged, dynamic team.
- Interesting work in an international research center.
- Potential scientific publication of the derived results.
- **Paid** thesis.
- Mentoring program for new employees.
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- Corporate events.

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If you consent that your submitted data is also stored in our talent pool for up to 1 year after the last contact with you, please let us know by E-mail. You may withdraw your consent at any time.

APPLY NOW and JOIN OUR TEAM

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