



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.

## Master Thesis

### “Security design patterns for automated vehicles”

Ref.Nr. E\_111

Diploma Work

With the integration of new IoT based software and wireless communication functionality, required to make automated vehicles reality, security has gained high importance in automotive. Potential security issues must be considered already at the initial stages of system development. The usage of security design patterns, defining security mechanisms and their fundamental characteristics, is a promising approach for ensuring the development of secure systems. In order to support an ongoing research project, a collection of security design patterns for external or in-vehicle communication for automated vehicles should be elaborated. Based on a use case for an automated robot vehicle (called SPIDER) a selection of security design pattern shall be implemented to show the applicability.



## TASKS

- Literature research for
  - Threats
  - Security patterns
- Impact analysis of possible attacks
- Develop a set of generic security design patterns
  - Based on existing technologies
  - with appropriate selection criteria
- Implement one generic security design pattern for a concrete architecture for evaluation

## OFFER

- Collaboration and contribution in an engaged, dynamic team
- Interesting work in an international research center
- Insight into current research topics regarding automated driving
- **Paid Thesis**
- Mentoring program for new employees'
- Diverse sports and health activities
- Corporate Events

## PROFILE

- Master study in Computer Science, Software Engineering, Electrical engineering or similar
- Interest in cybersecurity
- Individual responsibility and commitment
- Fundamental programming skills

**For technical questions, please contact**

Nadja Marko  
[nadja.marko@v2c2.at](mailto:nadja.marko@v2c2.at),  
+43-(0)316-873-9640

## APPLY NOW and JOIN OUR TEAM

Your Contact:  
Georg Herzog / Recruiting / + 43- 316- 873- 9028