

Curriculum Vitæ

Personal Data

Name Till Schallau
Address Calvinstr. 25, 44143 Dortmund, Germany
Telephone +49 157 51568493
E-Mail till.schallau@tu-dortmund.de
Birthday May 5, 1994 in Hagen, Germany
Nationality German



Education

since 01/2020 **Doctor of Engineering (Dr.-Ing.)**, *TU Dortmund University*, Dortmund.
Ph.D. Topic:
Safety of Autonomous Systems Through Analyzing Formal Specifications of Conditions in Scenario-Based Testing

04/2016 – 08/2019 **Master of Science in Computer Science**, *TU Dortmund University*, Dortmund.
Focus areas: Software Engineering and Algorithmics

10/2013 – 04/2016 **Bachelor of Science in Computer Science**, *TU Dortmund University*, Dortmund.
Minor: Economics - Management and Organization

09/2004 – 07/2013 **A-levels**, *Ricarda Huch Gymnasium*, Hagen.

08/2000 – 09/2004 **Elementary school**, *Hermann-Löns-Schule*, Hagen.

Research Projects & Funding

115,000 EUR **Software Campus**, *German Federal Ministry of Education and Research (BMBF)*, 2025.
Awarded competitive funding as a Ph.D. student in the Software Campus program, which supports future academic and industry leaders in IT. The program combines leading a self-designed, independently managed research project with intensive training in leadership and soft skills.
During the project, I lead a 20-month research initiative titled *VeRBAL – Vehicle Requirements Specification and Behavior Analysis Language*, in collaboration with Volkswagen AG. The goal of this project is to develop a user-friendly domain-specific language (DSL) that enables non-technical experts to formally specify traffic rules and system requirements in a readable and precise format.
As part of the program, I also receive training in areas such as project management, scientific leadership, and strategic decision-making, preparing me for future roles in academia or high-level research environments.

Professional Experience

- since 01/2020 **Researcher & Ph.D. Student**, *TU Dortmund University*, Dortmund.
Project management:
Management and development of the software tool STARS (Scenario-based Testing of Autonomous Robotic Systems) as part of the doctorate on the basis of a previous cooperation with Volkswagen AG. Guidance and support of student researchers within the STARS infrastructure and also students in the context of final theses.
- Supervision of bachelor and master theses:*
Supervised subject areas: Test code generation, domain-specific modeling environments, software architecture, scenario-based testing, validation of automated driving systems
- Software internship (approx. 300 students per year):*
- Teaching in the semi-annual software internship
 - Restructuring of the internship and improvement of teaching by means of university didactic concepts
 - Supporting the management in the management of 9 student assistants
 - Planning the framework *BoardGameWork* with other persons responsible for the software internship (<https://github.com/tudo-aqua/bgw>)
- 10/2019 – 12/2019 **Full-Stack Developer**, *Netzlab GmbH*, Dortmund.
Project management:
Implementation of a customer order from the requirements analysis through the implementation and development of the product to its use. Analysis of the requirements and their allocation to the 3 people in the team based on the skills and strengths of the team members.
- Full-Stack .NET Webdeveloper
 - Application development from project planning to release
 - Focus on software architecture and backend development
 - Contribution of specialist knowledge to management
 - Training of new employees
- 07/2016 – 10/2019 **Working student**, *Netzlab GmbH*, Dortmund.
- Full-Stack .NET Webdeveloper
 - Application development from project planning to release
 - Focus on software architecture and backend development
 - Contribution of specialist knowledge to management
 - Training of new employees

Publications

- 2025 **Post-hoc Scenario-based Testing of Automated Driving Systems: Classification of Driving Scenarios and Checking of Functional Requirements in Recorded Data.**
Till Schallau, Dominik Schmid, Nick Pawlinorz, Harun Teper, Jian-Jia Chen, Falk Howar
In *IEEE Intelligent Vehicles (IV 2025)* (to be published)
- Extended Abstract of Poster: STARS: Tree-Based Classification and Testing of Feature Combinations in the Automated Robotic Domain.**
Till Schallau, Dominik Schmid, Nick Pawlinorz, Stefan Naujokat, Falk Howar
In *IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW 2025)*
DOI: <https://doi.org/10.1109/ICSTW64639.2025.10962523>

- 2024 **Tree-Based Scenario Classification.**
 Till Schallau, Stefan Naujokat, Fiona Kullmann, Falk Howar
 In *NASA Formal Methods (NFM 2024)*
 DOI: https://doi.org/10.1007/978-3-031-60698-4_15
- STARS: A Tool for Measuring Scenario Coverage When Testing Autonomous Robotic Systems.**
 Till Schallau, Dominik Mäckel, Stefan Naujokat, Falk Howar
 In: *Dependable Computing – EDCC 2024 Workshops (EDCC 2024)*
 DOI: https://doi.org/10.1007/978-3-031-56776-6_6
- 2023 **Validating Behavioral Requirements, Conditions, and Rules of Autonomous Systems with Scenario-Based Testing.**
 Till Schallau, Stefan Naujokat
 In *Electronic Communications of the EASST (ECEASST 2023)*
 DOI: <https://doi.org/10.14279/tuj.eceasst.82.1222>
- 2022 **Aligning the Learning Experience in a Project-Based Course: Lessons Learned From the Redesign of a Programming Lab.**
 Malte Mauritz, Stefan Naujokat, Christian Riest, Till Schallau
 In *4th International Workshop on Software Engineering Education for the Next Generation (SEENG 2022)*
 DOI: <https://doi.org/10.1145/3528231.3528358>
- 2021 **Do Away with the Frankensteinian Programs! A Proposal for a Genuine SE Education.**
 Simon Dierl, Falk Howar, Malte Mues, Stefan Naujokat, Till Schallau
 In *Third International Workshop on Software Engineering Education for the Next Generation (SEENG 2021)*
 DOI: <https://doi.org/10.1109/SEENG53126.2021.00012>
- 2021 **Jaint: A Framework for User-Defined Dynamic Taint-Analyses Based on Dynamic Symbolic Execution of Java Programs.**
 Malte Mues, Till Schallau, Falk Howar
 In *International Conference on Integrated Formal Methods (IFM 2020)*
 DOI: https://doi.org/10.1007/978-3-030-63461-2_7

Academic service

Journal Reviews

- 2024 Journal of Integrated Design & Process Science (JIDPS)
 2023 Electronic Communications of the EASST (ECEASST)

Conference Reviews

- 2021 International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)

Academic Qualifications & Certificates

- 2025 Career certificate - Academia & Research
 2022 Professional teaching competence for higher education

Supervised final theses

All works marked with * were supervised by me, but not reviewed.

Most of the thesis' titles are translated to English but were originally written in German.

- 2025 **Analysis of the INTERACTION data set using the STARS framework.**
Bachelor's thesis, TU Dortmund
- Continuous TSC evaluation and visualization for driving in CARLA.**
Bachelor's thesis, TU Dortmund
- Scenario Generation based on missing feature combinations using SCENIC.**
Bachelor's thesis, TU Dortmund
- Design and evaluation of CARLA autopilots with adjustable qualities.**
Bachelor's thesis, TU Dortmund
- 2024 **Development and evaluation of a source-independent interface for the STARS framework using a ROS2 environment using the CARLA simulator as an example.**
Bachelor's thesis, TU Dortmund
- Development of a DSL with MPS for modeling Tree-Based Scenario Classifiers.**
Bachelor's thesis, TU Dortmund
- Test case creation for STARS Scenario Features through efficient labeling of driving data in GTA V.**
Bachelor's thesis, TU Dortmund
- Analysis of the scenario diversity of the KITTI dataset with the STARS framework.**
Bachelor's thesis, TU Dortmund
- 2023 **Development of a domain-specific modeling environment for NAOqi dialogs with Jetbrain's MPS.**
Bachelor's thesis, TU Dortmund
- Extraction of formally analyzable driving data from computer games using the example of GTA 5*.**
Bachelor's thesis, TU Dortmund
- Scenario-based evaluation of formalized traffic rules for freeway traffic with the STARS framework*.**
Bachelor's thesis, TU Dortmund
- Analysis of cloud-native modernization of enterprise Java web applications using a migration toolkit.**
Bachelor's thesis, TU Dortmund in cooperation with Materna
- 2022 **Design and development of a collaborative UML modeling environment tailored to the requirements of the software internship.**
Bachelor's thesis, TU Dortmund

- 2021 **Name- and annotation-based code generation to simplify the creation of JUnit tests for a web application.**
Master's thesis, TU Dortmund

Languages

- German Native language
English Fluent in writing and speaking (C2)
Japanese Basic knowledge (JLPT-N5, CEFR A2)

IT Competences

- programming languages Kotlin, C#, Java, Python, JetBrains MPS, Xtext
Web technologies .NET MVC, .NET Core, Wordpress, XHTML, CSS, Javascript, Typescript, Ajax, XML, JSON
Databases MS SQL Server, MySQL

Open-Source Publications

- 2024 **LT_Xpackage**, *temporal-logic - Symbols for Temporal Logics*.
This package defines functions to represent temporal operators defined in the *Linear Temporal Logic* (LTL), the *Metric Temporal Logic* (MTL), the *Metric First-Order Temporal Logic* (MFOTL) and the *Counting Metric First-Order Temporal Binding Logic* (CMFTBL).
<https://ctan.org/pkg/temporal-logic>
- since 2023 **STARS-Framework**.
STARS (Scenario-Based Testing of Autonomous Robotic Systems) is a formal framework for coverage analysis of test data for autonomous robotic systems.
<https://github.com/tudo-aqua/stars>
- since 2021 **BGW-Framework**.
BoardGameWork is a framework for creating 2D board game applications.
<https://github.com/tudo-aqua/bgw>

Academic self-administration

- since 2024 Project group representative for Computer Science at TU Dortmund University
2023 – 2024 Scientific member of the appointment committee *Human-AI Interaction* of TU Dortmund University
2020 – 2022 Study counseling

Part-time self-employment

- since 11/2021 **Photographer/Videographer**.
Photography: *concerts, festivals, weddings, band photos, sports*
Video productions: *live performances, music videos* (planning, creating a script, preparation, execution, post-production and publication)

10/2020 – 11/2022 **Software development.**

Joint planning and development of the interactive tool for illustrating camera settings with two other contributors (<https://photo-tools.net>).

Voluntary activities

2022 – 2024 Founding and putting together a new mixed volleyball team in the club *TV Hasperbach 1898 e.V.*. Assumption of the position of team manager and coach of the team. Supporting the volleyball department with administrative and editorial work on the club website.