Curriculum Vitæ

Personal Data

Name	Till Schallau
Address	Calvinstr. 25, 44143 Dortmund, Germany
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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

Conference Reviews

2025   IEEE International Conference on Intelligent Transportation Systems (ITSC)

2025   IEEE International Automated Vehicle Validation Conference (IAVVC)

2025   International Symposium on Leveraging Applications of Formal Methods Verification and Validation (ISoLA)

2025   International Conference on Bridging the Gap between AI and Reality (AISoLA)

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

Journal Reviews

2024   Journal of Integrated Design & Process Science (JIDPS)

2023   Electronic Communications of the EASST (ECEASST)

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

Continous 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	**LaTeXpackage**, *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.