Carolin **Brandt**

Assistant Professor in Software Engineering

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Education

Assistant Professor	*September 2024 – current*

Delft University of Technology, Software Engineering Research Group

- Considering the humans who will use our software and the developers who create it during software engineering processes
- Leading the research line on Human and Developer-Centered Software Engineering
- Instructor for the courses Software Quality and Testing (BSc), Sustainable Software Engineering (MSc), and Software Engineering Methods (BSc-minor)

Postdoctoral Researcher	*February – August 2024*

Delft University of Technology, Software Engineering Research Group

- Empowering automatic generation tools to collaborate with sotware developers
- Strengthening my experience with a focus on co-supervising PhD Students and international / industry research collaborations
- Part of the TestShift project with Andy Zaidman

Visiting PhD Student	*August – November 2023*

Hamburg University, Applied Software Technology Group

- Guest of Prof. Walid Maalej, one of the world's experts in requirements engineering
- Exploring connections between software testing and requirements engineering research

PhD Student	*2020 – 2024*

Delft University of Technology, Software Engineering Research Group

- Graduated with distinction (cum laude, top 5% of graduates) in July 2024
- Test Amplification For and With Developers
- Part of the TestShift project, advised by Andy Zaidman and Arie van Deursen

Master

How to Analyze Build Logs — A Comparative Study of Chunk Retrieval Techniques	*2019*

Paper-Based Master Thesis, Guest at the Software Engineering Research Group, Delft University of Technology

- Composing a dataset of build logs labeled with extractable substrings
- Comparing Programming by Example, classical information retrieval and keyword search

Elite Graduate Program Software Engineering	*2017 – 2019*
University of Augsburg, Technical University of Munich, Ludwigs-Maximilans-University Munich	*Avg. grade: 1.09, 'very good'*

- Geared towards especially talented and motivated students in computer science
- Advanced education in software engineering, formal methods, database systems, distributed systems and human-computer interaction
- Highly selective admission: at most 20 students per year

Bachelor

A Description Language for Structural Smells	*2017*

Bachelor Thesis in Computer Science

- Developed a domain specific language to define automated analyses for structural smells within requirements artifacts
- Implemented automated analysis generation within the Qualicen Scout requirements analysis tool

Scholarship "Deutschlandstipendium"	*2016 – 2018*

Combined public and industrial scholarship for excellent students

Admission to best.in.tum	*2015*

Group of the best 2% of students at the faculty of computer science

Bachelor Computer Science: Games Engineering	*2014 – 2017*
Technical University of Munich	*Avg. grade: 1.3, 'very good'*

- Computer science with a practical focus in games
- Computer graphics, game physics, artificial intelligence, social games, human-computer interaction and usability

Publications

Journals

Shaken, Not Stirred. How Developers Like Their Amplified Tests
2024

Brandt, Carolin; Khatami, Ali; Wessel, Mairieli; Zaidman, Andy

- IEEE Transactions on Software Engineering
- https://doi.ieeecomputersociety.org/10.1109/TSE.2024.3381015, preprint: https://carolin-brandt.de/publications/brandt-tse24.pdf

Developer-Centric Test Amplification: The Interplay Between Automatic Generation and Human Exploration
2022

Brandt, Carolin; Zaidman, Andy

- Empirical Software Engineering 27.4 (2022): 1-35.
- https://doi.org/10.1007/s10664-021-10094-2 (open access)

Conferences

Towards Refined Code Coverage: A New Predictive Problem in Software Testing
2025

Brandt, Carolin; Aurora Ramírez

- International Conference on Software Testing, Verification and Validation: Short Papers, Vision and Emerging Results (ICST'25)

Software Quality Assurance Analytics: Enabling Software Engineers to Reflect on QA Practices
2024

Khatami, Ali; Brandt, Carolin; Zaidman, Andy

- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'24)
- https://doi.org/10.1109/SCAM63643.2024.00027, preprint: https://carolin-brandt.de/publications/khatami-scam24.pdf

Mind the Gap: What Working With Developers on Fuzz Tests Taught Us About Coverage Gaps
2024

Brandt, Carolin; Castelluccio, Marco; Holler, Christian; Kratzer, Jason; Zaidman, Andy; Bacchelli, Alberto

- ACM/IEEE International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP'24)
- Collaboration with Mozilla and the Unversity of Zurich
- https://doi.org/10.1145/3639477.3639721, preprint: https://carolin-brandt.de/publications/brandt-icseseip24.pdf

Using GitHub Copilot for Test Generation in Python: An Empirical Study
2024

El Haji, Khalid; Brandt, Carolin; Zaidman, Andy

- ACM/IEEE International Conference on Automation of Software Test (AST'24)
- https://doi.org/10.1145/3644032.3644443, preprint: https://carolin-brandt.de/publications/elhaji-ast24.pdf

When to Let the Developer Guide: Trade-offs Between Open and Guided Test Amplification
2023

Brandt, Carolin; Wang, Danyao; Zaidman, Andy

- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'23)
- https://doi.org/10.1109/SCAM59687.2023.00032, preprint: https://carolin-brandt.de/publications/guided_test_amplification_SCAM_2023.pdf

How Does This New Developer Test Fit In? A Visualization to Understand Amplified Test Cases
2022

Brandt, Carolin; Zaidman, Andy

- IEEE Working Conference on Software Visualization (VISSOFT'22)
- https://doi.org/10.1109/VISSOFT55257.2022.00011, preprint: https://carolin-brandt.de/publications/TIG_paper_VISSOFT_2022.pdf

Fixing Continuous Integration Tests From Within the IDE With Contextual Information
2022

Boone, Casper; Brandt, Carolin; Zaidman, Andy

- IEEE/ACM International Conference on Program Comprehension (ICPC'22)
- https://doi.org/10.1145/3524610.3527908, preprint: https://carolin-brandt.de/publications/TestAxis_icpc22.pdf

Naming Amplified Tests Based on Improved Coverage
2021

Nijkamp, Nienke; Brandt, Carolin; Zaidman, Andy

- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'21)
- https://doi.org/10.1109/SCAM52516.2021.00036, preprint: https://carolin-brandt.de/publications/NATIC_paper.pdf

Removing Redundant Statements in Amplified Test Cases
2021

Oosterbroek, Wessel; Brandt, Carolin; Zaidman, Andy

- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'21)
- https://doi.org/10.1109/SCAM52516.2021.00037, preprint: https://carolin-brandt.de/publications/RS_paper.pdf

LogChunks: A Data Set for Build Log Analysis
2020

Brandt, Carolin; Panichella, Annibale; Zaidman, Andy; Beller, Moritz

- International Conference on Mining Software Repositories (MSR'20).
- https://doi.org/10.1145/3379597.3387485 (open access)

Workshops

Strategies and Challenges in Recruiting Interview Participants for a Qualitative Evaluation *2022*

Brandt, Carolin; Zaidman, Andy

- International Workshop on Recruiting Participants for Empirical Software Engineering (RoPES'22)
- preprint: https://carolin-brandt.de/publications/ropes_2022.pdf

Incremental Just-In-Time Test Generation in Lock-Step with Code Development *2022*

Brandt, Carolin

- International Summer School on Search-and Machine Learning-based Software Engineering (SMILESENG)
- Received the Best "New Ideas and Work in Progress" Paper/Presentation Award
- preprint: https://carolin-brandt.de/publications/smileseng_2022_abstract.pdf

Pen-Pen: A Wellbeing Design to Help Commuters Rest and Relax *2018*

Pichlmair, Monika; Brandt, Carolin; Henrich, Marcel; Biederer, Alexander; Aslan, Ilhan; Bittner, Björn; André, Elisabeth

- Designed and evaluated a neck-cushion, mobile app and multi-modal feedback loop to increase commuters' wellbeing.
- ICMI Human-Habitat for Health Workshop, https://doi.org/10.1145/3279963.3279966

Prizes

2024	**Distinguished Reviewer Award**,	International Conference on Mining Software Repositories
2023	**Distinguished Reviewer Award**,	International Conference on Mining Software Repositories
2022	**Best "New Ideas and Work in Progress" Paper / Presentation**,	SMILESENG Summer School
2022	**Award for Best Artifact**,	IEEE Working Conference on Software Visualization
2022	**Second Place Poster Competition**,	Alice & Eve 2022
2021	**International Women in Technology Scholarship**,	Personal Scholarship by Zonta, US$8000
2017	**First Place at the HackaTUM Hackathon**,	Category "Bike-Rental Systems Analysis"
2014	**Best Graduate in Chemistry**,	German Chemical Society
2014	**Third Place at the Individual Competition of the "Day of Mathematics"**,	University of Ulm

Supervised Students

current	**Roderick de Britto Heemskerk**,	Master Thesis
current	**George Vegelien**,	Master Thesis with Exact
2023	**Khalid El Haji**,	Master Thesis
2022	**Danyao Wang**,	Master Thesis
2021	**Nienke Nijkamp, Wessel Oosterbroek, George Vegelien, Swastik Agarwal**,	Bachelor Thesis
2021	**Casper Boone**,	Master Thesis

Academic Service

2025	**ICPC**, Program Committee
2025	**IDE Workshop**, Co-Organizer
2025	**ICST**, Publicity Chair
2024	**IEEE Software**, Journal Reviewer
2024	**ASE**, Artifact Evaluation Committee
2023+24	**MSR**, Junior Program Committee (2023), Program Committee (2024)
2023+24	**MSR: Data and Tool Showcase**, Program Committee
2024+25	**VST**, Program Committee
2023	**ACM Transactions on Software Engineering and Methodology**, Journal Reviewer
2022	**FUZZING**, Artifact Evaluation Committee
2022+23	**IEEE Transactions on Software Engineering**, Journal Reviewer
2022	**Journal of Systems and Software**, Journal Reviewer
2022	**BENEVOL, TestVis**, Program Committee
2022	**ECOOP**, Publicity Chair
2022	**Alice & Eve**, Web Chair
2021	**Journal of Software: Evolution and Process**, Journal Reviewer
2021	**VISSOFT**, Program Committee, Publicity Chair
2021	**ISSTA**, Artifact Evaluation Committee
2021	**ICSE**, Organization Committee, Watch Parties and Gather.Town
2020	**ICSE**, Student Volunteer, Streaming in the Europe Timeband
2020	**ESEC/FSE, ASE**, Student Volunteer

Practical Experiences

Research Industry Internship at Oracle Labs
2018

Two Months with the Multilingual Engine Team at Oracle Labs Zurich, Switzerland
Python, pandas and SQL

- Transformed pandas data analysis operations to SQL
- Benchmarked against python running within the database process using GraalVM

Software Engineer at Qualicen GmbH
2017 – 2018

Quality analyses of natural language requirements and tests artifacts
Java, ConQAT and Ranorex

- Extended ConQAT based analyses of requirements documents
- Halved the code size by safely deleting no longer used research components
- Developed automated UI test using Ranorex
- Managed GitLab and development workflow

Teaching Assistant
2016

Introduction to Software Engineering
Operating Systems and Embedded Programming

Ferienakademie Technical University of Munich
2015 – 2017

2017: Creating Animations by Machine Learning and Simulation
Neural Networks with Tensorflow
2016: Cyber Physical Systems
iOS Programming
2015: Let's Play – Simulated Physics for Interactive Games
Project Manager

Additional Activities

DiversAbility: TU Delft Resource Group for Neurodivergence, Hidden and Chronic Vulnerabilities
2023 – current

Board Member

Honorary supervisor at the "Kibelino" summer camp for children from 7 to 15
2016 – 2018

Program Manager

Private tutor
2013 – 2017

Maths, Physics and Chemistry

Hobbies

Archery, Organizing, Hiking, Gardening

Qualifications

Languages

native speaker	German
fluent	English, Dutch
elementary	French, Japanese

Software Development

Main Languages	Java, Python
Advanced experience	LaTeX, C#
Basic experience	Ruby, R, Ranorex, C, C++, XText, Xamarin, ConQAT