# CHRISTOPH THIEDE

**Research student in software engineering with a passion for enhancing developer productivity. Skilled in IDE development and creating programming and debugging tools with a focus on generative AI.**


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## EXPERIENCE

### Student Research and Teaching Assistant

**Hasso Plattner Institute**

2019-08 – present

- Maintained and extended the open-source IDE Squeak/Smalltalk and its ecosystem
- Supported and conducted own research projects on programming and debugging tools
- Co-authored an introductory textbook about the Squeak/Smalltalk system
- Supervised undergraduate student groups in software architecture and engineering projects about agile practices and technical challenges

### Software Engineering Intern

**JetBrains**

2025-01 – 2025-05

- Conducted research, prototyping, and evaluation of approaches for implementing reliable, reusable, transparent, and non-intrusive test runners across multiple programming languages and frameworks, including Python, Gradle, and Node.js
- Implemented and integrated the selected solution into the Fleet platform, including the migration of existing features from legacy implementations to the new framework

### Student Software Engineering Assistant

**Museums of the Hasso Plattner Foundation**

2020-08 – 2024-07

- Maintained a data mining and analytics platform to provide management with insights from different social media platforms and the internal booking system
- Developed a dashboard that tracks booking quotas and helps the museum staff to avoid overbooking

## EDUCATION

### M.Sc. IT-Systems Engineering

**Hasso Plattner Institute**

2021-04 – 2025-10

Final grade: 1.0 (GPA: 4.0)
Master thesis: *The Semantic Workspace: Augmenting Exploratory Programming with Integrated Generative AI Tools*

### B.Sc. IT-Systems Engineering

**Hasso Plattner Institute**

2017-10 – 2021-03

Final grade: 1.5 (GPA: 3.5)
Bachelor thesis: *Exploring Museum-Related Social Media Posts Using Aspect-Based Sentiment Analysis*

## SELECTED SKILLS

JavaScript/TypeScript | Python | Squeak/Smalltalk | Kotlin | C#/.NET | Linux/Bash | HTML/CSS (basic)

SDLC (git, CI/CD) | Agile (Scrum, XP) | Rapid Prototyping | Retrieval-augmented generation

**German (native)**
**English (fluent)**

## OTHER ACTIVITIES

Core Developer of Squeak
Elected Member of the Squeak Oversight Board
Jazz piano improviser

## SELECTED PROJECTS

### SemanticSqueak

**Generative AI tools for exploratory programming**

Retrieval-augmented generation | OpenAI API | Smalltalk

- Developed a conversational agent using GPT-4 and integrated it into the Squeak IDE to augment exploratory programming (Onward! 2024 conference)
- Implemented a framework for generative AI, semantic search, and an OpenAI API client

### trace4d

**Interactive 3D visualization of program traces**

JavaScript | Three.js | D3.js

Developed an animated 2.5D object map for exploring object-oriented program behavior (IVAPP 2024)

### TraceDebugger

**Back-in-time debugger for Squeak**

Bytecode interpretation | Smalltalk

- Developed a program tracer and a time-travel debugger for the Squeak/Smalltalk IDE to facilitate flexible navigation and improve program comprehension
- Created a novel mechanism for exploring state changes of objects (Onward! 2023 conference)

### Downstream Repository Mining

**VS Code extension for npm package developers**

VS Code Extension API | TypeScript Compiler API | GraphQL

Developed a prototype that collects downstream dependency projects and code samples for npm packages from GitHub & Co. and allows package developers to analyze usage of their APIs (ENASE 2022 conference)

# PUBLICATIONS

## Conference Proceedings

- Lukas Böhme, Christoph Thiede, Toni Mattis, Tom Beckmann, Jens Lincke, and Robert Hirschfeld. Toward Bridging the Tool Gap: Equipping Large Language Models with Tools to Answer Programmers' Questions. In: *Proceedings of the 4th ACM SIGPLAN International Workshop on Programming Abstractions and Interactive Notations, Tools, and Environments*. PAINT '25. Singapore: Association for Computing Machinery, 2025, pp. 15–24. DOI: 10.1145/3759534.3762682.
- Christoph Thiede, Marcel Taeumel, Lukas Böhme, and Robert Hirschfeld. Talking to Objects in Natural Language: Toward Semantic Tools for Exploratory Programming. In: *Proceedings of the 2024 ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software*. Onward! '24. Pasadena, California: ACM, Oct. 2024. DOI: 10.1145/3689492.3690049.
- Christoph Thiede, Willy Scheibel, and Jürgen Döllner. Bringing Objects to Life: Supporting Program Comprehension through Animated 2.5D Object Maps from Program Traces. In: *Proceedings of the 19th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications*. Vol. 1. IVAPP '24. INSTICC. Rome, Italy: SciTePress, Feb. 2024, pp. 661–669. DOI: 10.5220/0012393900003660.
- Christoph Thiede, Marcel Taeumel, and Robert Hirschfeld. Time-Awareness in Object Exploration Tools: Toward In Situ Omniscient Debugging. In: *Proceedings of the 2023 ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software*. Onward! '23. Cascais, Portugal: ACM, Oct. 2023, pp. 89–102. DOI: 10.1145/3622758.3622892.
- Christoph Thiede, Marcel Taeumel, and Robert Hirschfeld. Object-Centric Time-Travel Debugging: Exploring Traces of Objects. In: *Companion Proceedings of the 7th International Conference on the Art, Science, and Engineering of Programming*. Programming '23 Companion. Tokyo, Japan: Association for Computing Machinery, Mar. 2023, pp. 54–60. DOI: 10.1145/3594671.3594678.
- Christoph Thiede, Willy Scheibel, Daniel Limberger, and Jürgen Döllner. Augenting Library Development by Mining Usage Data from Downstream Dependencies. In: *Proceedings of the 17th International Conference on Evaluation of Novel Approaches to Software Engineering*. ENASE '22. INSTICC. SciTePress, 2022, pp. 221–232. DOI: 10.5220/0011093700003176.

## Books

- Christoph Thiede and Patrick Rein. *Squeak by Example*. Vol. 6.0. ISBN: 978-1-4476-2948-1. Lulu, 2023.
- Christoph Thiede and Patrick Rein. *Squeak by Example*. Vol. 5.3.1. 2021.

# REFEREES

**Dr. Marcel Taeumel**
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Mentor and co-author

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