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
  - Refurbished inspector tools, added watch expressions, and designed a new extension API for custom inspectors
  - Contributed to the Squeak 6.0 release by fixing several bugs in the debugging infrastructure and writing the release notes
  - Contributed new features such as lookarounds to the regular expression engine
- Supported and conducted own research projects on programming and debugging tools
- Co-authored an introductory textbook ⬈ about the Squeak/Smalltalk system
  - Wrote and updated chapters on tools and libraries
  - Set up the a CI/CD pipeline with GitHub Actions to autogenerate screenshots and validate code examples
  - Developed a simple LaTeX parser to access book from the IDE
- Supervised a team of undergraduate students in a software engineering project ⬈ and guided them through agile practices and technical challenges

Student Software Engineering Assistant
Museums of the Hasso Plattner Foundation

📅 2020-08 – present

- 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 (in progress)
Hasso Plattner Institute

📅 2021-04 – 2025-09 (expected)

Current average: 1.0 (GPA: 4.0)

Highlighted courses: Programming Experience · Reverse Engineering · Advanced Programming Tools · Parallel Programming and Heterogeneous Computing · Neurodesign · Global Design Thinking Workshop

Master thesis (in progress): *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)

Highlighted courses: Project Management · Programming of User Interfaces · Agile Software Development in Large Teams

Bachelor thesis: *Exploring Museum-Related Social Media Posts Using Aspect-Based Sentiment Analysis*

SELECTED SKILLS

JavaScript/TypeScript Python Squeak/Smalltalk
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 pianist

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

- 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. To appear. Pasadena, California: ACM, Oct. 2024.

- 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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Supervisor and co-author