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 (Agile, Scrum) · git · CI/CD · Retrieval-augmented generation (RAG)

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

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Mentor and co-author