Hugh Benjamin Zachariae

Full Stack Developer | Frontend Specialist | Cryptography Enthusiast

I'm a Software Developer with 8 years of experience in Frontend and Backend development, including 1.5 years leading a Frontend community. Driven by a passion for innovation and a commitment to lifelong learning, I'm constantly seeking opportunities to leverage cutting-edge technologies.

You can check out my more *interactive* resume at my website zachariae.dev !

Technical Expertise

Cryptography & Computer Science

Focuses - Frontend, FullStack, Multi-Party Computation (MPC), Post-Quantum Secure Signature Protocols. I've developed projects in several aspects of IT, Frontend, Backend, and Data analysis. Here are some notable projects

- Major contributor to a large scale Assessment platform WISEflow.
- Committed major updates to an internal UI library to conform with modern standards and Accessibility WCAG AA needs.
- Implemented Threshold ECDSA and post-quantum cryptography solutions in Rust. Developed an MPC voting scheme leveraging Shamir Secret Sharing in Golang.
- Currently completing a Master's thesis in Post-Quantum Cryptology, working on a Post-Quantum Secure Digital Signature Algorithm (SDitH) in Rust with emphasis on low-level architecture and performance optimization.
- Developed a Bayesian Meta-Analysis package for R, combining technical proficiency with data science insights.

Frontend Development

React, Typescript, Astro, Vite, NextJS

- Proficient in modern frontend technologies, with expertise in Vite, SolidJS, Astro, React 19, NextJS and TypeScript.
- Advocated for type safety and automation by integrating TypeScript features like generics and type inference into workflows and introducing Linux-based CLI tools and GitHub workflows.
- I have a large amount of experience with Accessibility in terms of WCAG AA and developing a platform that adheres to the practices of an accessible UI.
- Experience with modern frontend unit testing in Vitest, Cypress and Playwright. I've developed both with and without such testing measures and know personally the positive functionality they provide.
- A *Typescript Wizard*. I work to develop type safe frontend software and increase the developer experience by developing generic types that ensure safety and auto-completion.

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Skills

Rust, Golang, Typescript, Python, React, Astro, Vite, NextJS

Cryptography, Multi-Party Computation, Zero-Knowledge proofs.

Linux,, Git, Docker, Node, Github Workflows

Management, Communication, Self-driven development

Languages

Danish (fluent)
English (fluent)

A Developer at Heart and Software Development Enthusiast

Curiosity and a will towards learning

Whether at work or in my free time, I'm immersed in software development. I'm passionate about personalizing and upgrading developer experiences through automation and tooling. My dual background in Cognitive Science and Computer Science provides me with a unique perspective that bridges technical and human-centric problem-solving. Whenever I see a place that could be optimised through development I seek to explore it.

Committed to continuous growth and innovation in software development, I actively explore modern frameworks and languages like Rust while maintaining a deep interest in cutting-edge frontend technologies such as Vite, Astro, and Bun. I regularly follow development news and industry outlets to stay informed about the latest trends in frontend, backend, quantum computing, and cryptography.

Leadership & Community Building

Tech lead and socialite

Tech Lead & Community Builder: As a Tech Lead in EdTech, I fostered collaboration and technical growth within the frontend community through mentorship and proactive maintenance planning. Beyond technical leadership, I'm passionate about building strong, inclusive, and innovative technical communities. I've managed and grown developer communities by promoting knowledge sharing and continuous learning, while also designing and implementing scalable solutions and mentoring team members on cutting-edge practices.

My strong communication skills enable me to align technical goals with broader organizational visions, and I thrive in social environments, actively contributing to a positive and collaborative workplace culture.

Key Accomplishments

- Spearheaded frontend development initiatives that improved developer workflows and elevated team performance.
- Implemented advanced cryptographic techniques in fast and low level languages.
- Engineered Accessibility into a platform through an internal UI library.
- Regular "go to" for knowledge on the frontend of the platform at a major EdTech company.
- Balanced academic research with hands-on technical skills, excelling in both theoretical and practical domains.

Experience

Uniwise, Aarhus — *Senior Frontend Developer*

July 2020 - Jan 2025

Frontend Development for WISEflow: Developed and maintained frontend solutions for the WISEflow digital exam platform, primarily using React and TypeScript. Also responsible for maintaining legacy systems built with AngularJS/TS, PHP Rain templates, and jQuery.

Full-Stack Aptitude: Demonstrated self-driven learning and rapid adaptation to new projects, enabling quick understanding of project structure. Proactively expanded knowledge into Backend and DevOps domains to efficiently handle bug fixes, development tasks, and project planning.

Key Skills Gained: Planning and development of micro frontend projects, gained experience in large-scale frontend developer experience (DevEx) maintenance and scaling, and honed collaboration skills in a team environment.

Uniwise, Aarhus — *Frontend Tech Lead*

Feb 2022 - Sep 2023

Frontend Community & Technical Leadership: Managed the frontend community, increasing engagement through regular meetups, knowledge sharing initiatives, and a focus on modern frontend practices.

Technical Advancement & Mentorship: Led efforts to modernize the company's frontend stack, significantly improving developer experience (DevEx) and reducing technical debt through strategic maintenance and upgrades. Provided mentorship to junior developers, enhancing their skills in debugging and issue resolution.

Key Achievements: Improved team communication and collaboration, streamlined frontend development processes through research and documentation of modern technologies, and successfully planned and executed cross-departmental maintenance projects.

Uniwise, Aarhus — *Student Developer*

Feb 2017 - Sep 2020

Responsibilities: Contributed to feature development on a collaborative team, building and enhancing frontend applications using React and TypeScript.

Key Learnings: Gained foundational experience in collaborative software development practices, including team communication, version control, and agile methodologies.

Education

Aarhus University, Aarhus - *Computer Science MA*

September 2023 - January 2025

Research interests include cryptography, quantum information processing, and multi-party computation (MPC). Proven ability to develop and implement cryptographic solutions, including a Post-Quantum Signature Scheme (SDitH) in Rust (based on NIST's 2nd call round 2) and an ECDSA Threshold Signature Scheme. Student developer experience at Uniwise.

Aarhus University, Aarhus - *Computer Science BA*

2018 - 2020

Developed a secure multi-party computation (MPC) voting scheme with Shamir Secret Sharing in Go (Golang). This final project demonstrated expertise in cryptographic protocols and secure distributed systems. Student developer experience at Uniwise.

Aarhus University, Aarhus - *Cognitive Science BA*

2015 - 2018

Part of the “Kognitionsvidenskabelig Forening" (Volunteer Association).

I was part of the first batch of students on the newly formed Cognitive Science course. I was introduced to the fundamental theories of cognition. I learned how to design and carry out my own investigations of the human mind, brain, and behavior. I developed a Bayesian Meta Analysis package in R for the final project.

Among other things, I learned about statistical data analysis and computer programming, which enabled me to

carry out my own experimental studies and to critically assess previous research results.

I learned how to design and carry out social experiments with Python and how to perform statistical data analysis with the R programming language. The computational part of the course introduced me to programming which led to choosing Computer Science as my Elective course and later to complete my Computer Science degrees.

If you got here, thank you for reading!