DERRICK STOLEE

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Executive Summary

I love solving hard technical problems with code in a way that improves the lives of others. For the past seven years, I have devoted my energies specifically towards scale problems in source control for large engineering systems to make those developer teams more efficient.

I am a top contributor to the open source Git project as well as an important contributor to several related tools, both open and closed source. I have held key leadership roles where I have influenced multiple organizations, from GitHub and Azure DevOps, Microsoft Windows and Office, and many external partners.

I believe that building a sustainable team is critical. As a prominent member of the Git community and a leading engineer in my organization, I have created a team that will be self-sustaining in my absence. By sharing responsibilities, prioritizing peer-to-peer learning, and not focusing on credit for individuals, I helped to break down silos and accelerate other engineers' careers.

To celebrate releases and to help educate the community, I enjoy sharing my expertise. In addition to writing blog posts and giving conference presentations, I have fostered a team culture that prioritizes outreach.

I'm currently looking for my next opportunity to learn and grow in new ways. Getting to my current level of seniority and expertise in engineering systems was a self-taught adventure, but lately I feel the need to reach for the next mountain to climb. This could be applying my engineering systems knowledge to a new area and new organization, or could be working in a new area rich with problems that are new to me.

Recent Employment Summary

GitHub

My team was "reverse-acquired" by GitHub in a reorganization, and I became the glue that held the team together during the chaos. While at GitHub, I established the team in its current organization structure, onboarded two engineering managers (one of which was promoted to area director), and trained two new team members. As my immediate team became a shining example within the organization, my scope broadened to include technical oversight of all teams working on the Git server.

During this time, I drove several deep technical contributions that enable Git at massive scale. In particular, my work to design and implement Git's sparse index accelerated the developer experience in the Microsoft Office monorepo within the Scalar system, as well as many other large repos in the wider community. I broke the year-long project into small deliverables that were independently reviewable with the Git community and used that framework to train new Git contributors. We completed the project on time and beyond the initial scope.

Principal Software Engineer	2021–Current
Staff Software Engineer	2020–2021

Microsoft, Azure DevOps

At Microsoft, I began by contributing to the Azure Repos backend as it scaled to host the Microsoft Windows monorepo. I specialized in designing and implementing advanced data structures to scale to the largest repositories. For example, my work enabled Azure Repos to show the commit graph view by default.

After the server-side scale was established, I recognized that the client experience needed many of the same data structures and algorithms I had designed for the backend. As I transitioned to the client team, the existing system was struggling architecturally as it strained under rapid prototyping and customer needs. While I contributed many performance enhancements to Git, I also formed an understanding of the existing system well enough to recognize that it was not the right solution for the Microsoft Office monorepo. I was the architect of the Scalar project from prototype to the full transition of Office developers to that new system.

Principal Software Engineer	2019–2020
Senior Software Engineer	2017–2019
Software Engineer II	2016–2017

Academic Employment Summary

My undergraduate education was focused on software development and entrepreneurship. However, I fell in love with graph theory and theoretical computer science and could not resist pursuing a graduate degree in those subjects. I *loved* being a graduate student, especially because I was fortunate enough to have employment as a research assistant that gave me time to accomplish internationally-recognized research. I primarily used software to solve theoretical problems in graph theory.

After graduating, I was also fortunate enough to find employment at research universities, including a tenure-track position. However, the duties of faculty life kept me away from doing my favorite thing: building software. Thus, I transitioned away from academia.

In addition to publishing 25 research articles, I mentored graduate students and led collaborative research groups, including co-founding the Graduate Research Workshop in Combinatorics.

Iowa State University
Assistant Professor, Departments of Mathematics and Computer Science 2013–2015

University of Illinois at Urbana-Champaign
Research Assistant Professor, Department of Mathematics 2012–2013

Education

Ph.D.	University of Nebraska–Lincoln	May 2012	Mathematics & Computer Science
	Advisors: Stephen G. Hartke and N. V. Vinodchandran		
	Dissertation: Combinatorics Using Computational Methods		
M.S.	University of Nebraska–Lincoln	December 2008	Mathematics
B.S.	University of Nebraska–Lincoln	May 2007	Mathematics & Computer Science
	Jeffrey S. Raikes School of Computer Science and Management; graduated with Honors		

Presentations

Git Internals: a Database Perspective, *Git Merge*, September 2022

The future of Git at scale (co-presented with Lessley Dennington), *GitHub Nova*, October 2021

Optimize your monorepo experience, *GitHub Universe 2020*, December, 2020

Git at Scale for Everyone, *Microsoft European Virtual Open Source Summit*, June 2020

Building Git for Windows, (co-presented with Johannes Schindelin) *Git Merge 2018*, March 2018

Professional Articles

The Story of Scalar (co-authored with Victoria Dye), *GitHub Eng. Blog*, October 2022

Git's Database Internals, *GitHub Eng. Blog*, August 2022 [Part I] [Part II] [Part III] [Part IV] [Part V]

Make your monorepo feel small with Git's sparse index, *GitHub Eng. Blog*, November 2021

Get up to speed with partial clone and shallow clone, *GitHub Eng. Blog*, December 2020

Commits are snapshots, not diffs *GitHub Eng. Blog*, December 2020

Introducing Scalar: Git at scale for everyone, *Azure DevOps Blog*, February 2020

Bring your monorepo down to size with sparse-checkout, *GitHub Eng. Blog*, January 2020

Exploring new frontiers for Git push performance *Azure DevOps Blog*, May 2019

Supercharging the Git Commit Graph, *Azure DevOps Blog*, June 2018 [Part I] [Part II] [Part III] [Part IV]

See `https://stolee.dev` *for a full list of articles, presentations, and links to commits for Git features.*