George Steel

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Technologies and Languages

Languages	Go, Rust, C++, JavaScript, Typescript, Haskell, Python, SQL, TEX
Technologies	FIDO2/Webauthn, MFA, OAuth, Lit, WebAnimations, Blink, WPT testing, W3C specs, Postgres, CockroachDB, GTK, EPUB, Flask

Education

2010 – 2016   **University of Toronto**, *Hon. B. Sc. in Mathematics*
- Minors in Computer Science and Biology.
- Graduated with High Distinction (GPA 3.9).

Employment History

Apr 2021 – Jun 2023   **Software Developer**, LoginID Canada
- Created an OpenID Connect server supporting configurable multi-factor authentication methods, including passwordless FIDO2, SMS, TOTP, and others.
- Led multiple refactoring projects to reduce tech debt and improve performance in related services, eventually architecting a move to a single-binary to reduce microservice overhead.

Jun 2019 – Nov 2020   **Software Developer**, *Chrome Animations*, Google Canada
- Helped complete and launch the WebAnimations API in Blink (the rendering and Javascript engine powering Chrome and Electron), giving a unified Javascript interface to declarative animations from all sources.
- Contributed a section to the WebAnimations spec (including cross-browser Web Platform Tests) allowing the creation and manipulation of animations targeting pseudo-elements.
- Contributed numerous bugfixes and optimizations across the Blink animations stack. This included allowing percentage transform animations (sidebars and some popups) to run off-thread, allowing them to run more smoothly despite the actions of other scripts on the same page.
- Contributions at https://chromium-review.googlesource.com/q/owner:gtsteel@chromium.org

Nov 2017 – Feb 2019   **Full-stack Software Developer**, *Satsuma Labs*
- Created a prototype mobile application using a Haskell backend and a React-Native frontend.
- Developed a number of open-source libraries furthering the Haskell web service and react-native ecosystems. (Available at https://github.com/SatsumaLabs)

May 2016 – May 2017   **Software Developer**, *Prof. Peter Jurgec*, Linguistics, University of Toronto
- Created browser-based educational software used in introductory phonology courses.
- Rewrote and further developed a research tool for analyzing the relative frequency of sound patterns. This involved finite automata and maximum entropy machine learning.

Sept 2013 – Mar 2014   **IT Assistant**, *ENAGB Youth Program*, Native Canadian Centre of Toronto

Created a responsive website for the ENAGB program (featuring a dynamic events calendar) along with a variety of promotional materials (posters, brochures, business cards, etc.) for the program.

Summer 2011, 2012   **Summer Research Assistant**, *Prof. Gilbert Walker*, Chemistry, University of Toronto

Performed spectroscopy and microscopy supporting research into creating nanoparticle based markers for medical diagnostic use, improving the sensitivity non-destructive procedures for determining particle shape.

Summer **Intern**, *Kerr Vayne Systems*
2010 Created a web application to stream real-time data for schedule display in a broadcast automation system.

Releases and Publications

2021 – 2022 **Contributions to Ink/Stitch**, https://github.com/inkstitch/inkstitch
Added a new algorithm for running stitch along curves which gets much more uniform stitch spacing as well as a system for randomized satin stitch which stays stable under changes in path shape.

2019 **persistent-spatial**, https://hackage.haskell.org/package/persistent-spatial
A structure for storing and indexing geographic coordinates which can be used with any SQL database.

2017 **Maxent Phonotactic Learner**, https://github.com/george-steel/maxent-learner
A tool for automatically inferring phonotactic grammars from a lexicon and using those grammars to generate random text, based on Hayes and Wilson's *A Maximum Entropy Model of Phonotactics and Phonotactic Learning*.

2017 **frpnow-gtk3**, https://hackage.haskell.org/package/frpnow-gtk3
High-level interface for GTK3 with FRPNow integration.

2016 – 2017 **PhonoApps**, *with Prof. Peter Jurgec*, http://phonology.us/
Computational and learning tools for phonologists.