Ryan Lester

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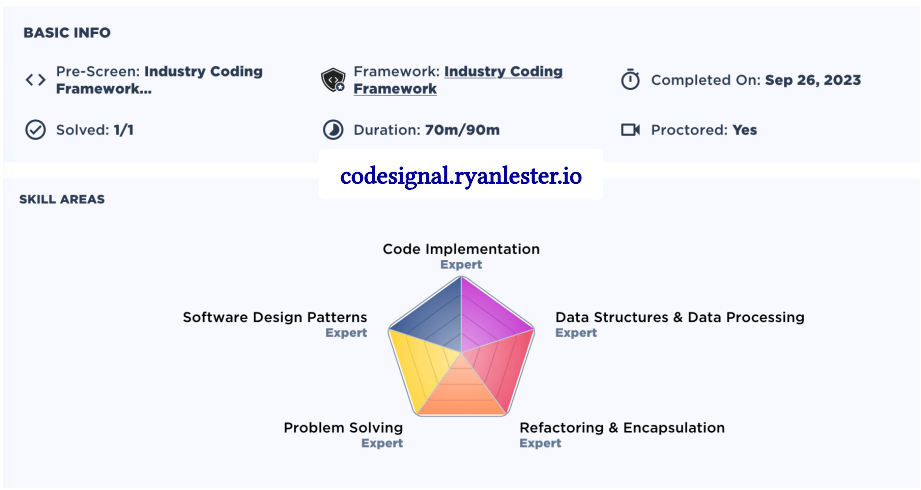
Highly productive full-stack engineer, AppSec expert, and founder with 15+ years' experience, crafting resilient systems end-to-end

Programming Skill Assessment



Skill Highlights

Expert

TypeScript / JavaScript, Bash, Node.js, regex, crypto, GCP, Firebase, Angular, rxjs, webpack

Proficient

Go, C#, Python, Java, SQL, React, Vue, AWS, Docker, CircleCI, nginx, Express, protobuf

Education

MACH37 Cyber Accelerator 2014
Curriculum focused on startups and business

Carnegie Mellon University 2010 – 2012
Intended Computer Science major (left early)

Certifications 2009
Microsoft Certified Systems Administrator, et al.

Employment History

Plutometry *Lead Developer* plutometry.com 2024 – Present
Currently leading architecture and development for version 2 of an advanced AI modeling platform used by large financial institutions

HackerOne *Secure Code Auditor* hackerone.com/product/code-security-audit • pullrequest.com 2022 – Present
Reviewer for the Code Security Audit and PullRequest services, auditing both entire codebases and individual pull requests

- Findings typically include such issues as cryptographic flaws, XSS vectors, compliance errors, bugs, and performance inefficiencies
- Highly praised for the breadth, depth, quality, actionability, and professionalism of issue reports submitted to customers
- Project tech stacks include Bash, C#, Docker, Java, Node.js, PHP, Python, React, Ruby, Rust, Solidity, Swift, Terraform, Vue, and more

Cyph *Principal Engineer* github.com/cyph • cyph.com/castle-platform • cyph.com 2014 – Present
Developed the Cyph tech stack and product suite

- **Cyph:** Quantum-resistant end-to-end encrypted super-app *(TypeScript, Node.js, Go, Angular, Cordova, Electron, Bash, Docker, GCP)*
  - Cross-platform suite of easy-to-use messaging, video meeting, social media, storage vault, and crypto wallet functionality
  - Combines the advantages of user-friendly non-E2EE services and secure E2EE services, while further improving security
  - Currently working with AI tooling and React Native to prototype smaller Cyph client apps, each focused on a specialized use case
- **WebSign:** Static website hosting service/tooling with patented end-to-end client security (code signing) *(TypeScript, Node.js, IPFS)*
  - Significantly enhances Cyph's user experience by allowing it to run as a web app, which would otherwise break its security model
- **Castle:** Friendly real-time database and messaging SDK with automatic private data encryption and public data signing *(TypeScript)*
  - Builds on Firebase with zero-knowledge security model and developer experience enhancements (e.g. support for protobuf types)
- **Air Gapped Signing Environment:** Highly secure certificate authority for Castle and WebSign (like an HSM + data diode) *(Node.js)*
  - Uses post-quantum keys from encrypted cold storage to perform signing over temporary unidirectional fiber optic UDP networks

SpaceX *Software Design Engineer in Test* spacex.com 2012 – 2013
Built automation that enabled small QA/DevOps team to support a large dev team for SpaceX and Tesla's internal ERP system, Warp Drive

- **Holodeck:** Integrated test recorder and powerful web UI testing framework *(C# / .NET, HTML / CSS / JS, Selenium, TFS)*
  - High-level DSL made generated code easy to read and maintain, with advanced features such as concurrent test composition
  - Recorder UI polished by months of user testing, handling everything up through check-in to version control
  - Allowed entire team to contribute tests, rapidly scaling up coverage
- **Starfleet:** Distributed testing system *(C# / .NET, Redis, Selenium Grid)*
  - Handled load balancing, dynamically spinning up infrastructure, and coordination between test agents
  - Dramatically sped up CI, which had become slow due to all the new tests, and added load testing as a side effect
- **Holodeck Macros:** Windows GUI tool to run tests with the local user's account and leave browser open *(PowerShell / .NET, WPF)*
  - Used by business analysts to automate the setup for complex manual functional testing scenarios
- Productivity ranked in top 5% during performance review due to the financial impact of these tools (potentially millions saved)

Robin Hood Camp *Counselor & Reports Director (seasonal)* robinhoodcamp.com 2008 – 2010
Taught chess and Rubik's Cube (personal record: 26 seconds); developed workflow automation and management dashboards in FileMaker Pro

Other

PlusMinus (full-stack development for Fortune 100 client, 2019) • ComVibe (startup development internship, 2010 – 2011)

Talks

HackerOne Security@ *"Lessons Learned in the Race to Secure Open Source"* securityat.ryanlester.io 2022
Discussed open source software security topics, the role of organizations, and potential future ecosystem developments

W3BX *"Building a Secure Bridge from Web2 to Web3 is a Fundamental Infrastructure Investment for the Ecosystem"* w3bx.ryanlester.io 2022
Walked through WebSign and the critical need for it in the crypto/web3 space to enable user-friendly self-custody solutions

TechCrunch Disrupt *Off-the-record Privacy & Security panel* tcdisrupt.ryanlester.io 2017
Spoke on various privacy and security topics, including predictions on future industry and regulatory developments

Black Hat & DEF CON *"Abusing Bleeding Edge Web Standards for AppSec Glory"* bhdc.ryanlester.io 2016
Demoed novel web security techniques, supercookie, and "RansomPKP" attack concept, which ultimately led to the deprecation of HPKP

Georgetown University *"Crypto In Security"* 2016
Guest lecture on applied cryptography to Professor Hans Engler's undergraduate Intro to Cryptography course

Patents

Cyph Portfolio *Principal Inventor* patents.ryanlester.io 2015 – Present
Led the creation of a highly valuable portfolio of 15 issued patents which advanced the state of the art in secure usability of cryptography

Projects

🔑 Security

pqcrypto.js *Author (open source)* pqcrypto.ryanlester.io 2022 – Present
Suite of NIST PQC quantum-resistant cryptographic algorithms for WebAssembly, built with JavaScript, C, Bash, and emscripten

libsodium.js *Co-Author (open source)* sodium.ryanlester.io 2017 – Present
Official WebAssembly version of the extremely popular cryptographic library libsodium, built with JavaScript, C, Bash, and emscripten

Bug Bounties *Hacker* 2016
Discovered Google Chrome vulnerabilities CVE-2016-1636 (SRI bypass, high severity) and CVE-2016-1694 (HPKP eviction, low severity)

Stripe: Capture the Flag *Winner (one of 250, out of 12k participants)* stripectf.ryanlester.io 2012
CTF competition to root a server; involved buffer overflows *(C / assembly)*, validation failures *(C / Bash, PHP, Python)*, and a timing attack *(C)*

Web

emscripten *Contributor (open source)* emscripten.ryanlester.io 2017 – Present
Developed the `SINGLE_FILE` flag, which has made WebAssembly viable for many use cases; built with Python and JavaScript

Repl.co *Author* 2013 – 2016
Collaborative C# code editor with in-browser execution, built with Firebase and JSIL (gifted the domain to Amjad Masad for Replit)

Napster.fm *Author (open source)* techcrunch_napsterfm.ryanlester.io • napsterfm.ryanlester.io 2013 – 2014
Social music streaming service with real-time sync, internationalization, and over 100k users; built with AngularJS, Bootstrap, and Firebase

html-resume *Author (open source)* htmlresume.ryanlester.io 2012 – Present
HTML framework used to create this document, built with CSS, Node.js, Puppeteer, and pdf-lib (originally Bash, wkhtmltopdf, and pdftk)

💰 Finance

simplebtc *Author (open source)* simplebtc.ryanlester.io 2014 – Present
High-level Bitcoin wallet API for browsers and Node.js, initially spun out of Token and currently used in Cyph

YC Hacks: Token *Team Member* ychacks.ryanlester.io 2014
Bitcoin debit card created for Y Combinator hackathon, built with Selenium, Coinbase, Blockchain.info, Node.js, and the iOS SDK

Algorithmic Trading *Author* 2013 – 2014
Experimentation with various machine learning approaches for trading stocks and forex, built with C#, Node.js, and the TradeStation API

Hackswipe *Author* 2010
Mobile point of sale system with SMS support, built using Python, Perl, and jQuery UI; awarded "best mobile app" at Yahoo! Hack Day

🌎 Misc

cordova-plugin-chooser *Author (open source)* chooser.ryanlester.io 2020 – Present
Android- and iOS-compatible Cordova plugin for importing files, adopted by Ionic Native; built with Java and Swift

@cyph/prettier *Author (open source)* prettier.ryanlester.io 2019 – Present
A custom fork of the prettier code formatter which improves ternary readability and aligns with pre-existing Cyph style conventions

Sundown.go *Author (open source)* sundown.ryanlester.io 2011
Markdown parser library for Go, built using Go, C, and Cgo to bind to a C implementation

Relationship Advice *Founder* relationshipadvice.ryanlester.io 2009 – Present
Started an online community on reddit and helped grow it to over 10 million users