Stephen D. Williams

Software / DevSecOps Engineer / Architect - Data - Robotics - Leadership
Full-stack Web, mobile, embedded, robotics, scalable cloud apps/APIs, security/crypto, startups
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Highlights

Overall Experience

With a deep technical, creative, interpersonal, and business background, I comfortably fit a wide range of roles.
I am a generalist problem solver who has delved deeply into many technical & industry areas on many interesting projects:

Modern full stack web (React, WebCompnt, Mobile (Android), Database: transactional / data lake / time series / embedded,

Data architecture, codecs, semantics, standards, DevSecOps + highly secure application architecture & development,

Robotics / embedded (mechanical design & invention, CAD, 3D printing, embedded control, streaming video),

VR (WebXR Oculus app), Video streaming + codecs (custom WebRTC set top box, nVidia Jetson, video conferencing),

Deep awareness / study / prototyping AI/ML/Vision, visualization, UX design, legal (Patent Agent soon), Japanese,

Led teams up to 20 in large enterprise, government projects, large & small startups, founded several startups, non-profit.

Experience with electronics, fabrication, sourcing, branding & marketing, copyediting, private pilot flying.

Other experience includes: deep mobile dev (custom Android), cameras & imaging (MIPI, Movidius), ebook reader apps, scalable server apps for millions of users, secure app dev, insurance quoting, banking, encryption, PKI CAs, various databases, protocols & standards work (IETF, W3C), and embedded factory machine control. I've run my own servers with DNS, email, web, usenet, and apps on the Internet since 1992. Mobile Android (Java/C++) and desktop Qt (C++) programming, Java/C++/JNI, XML, web services, rendering. Vision recognition. Cray XT3 installation, repair, mgmt.

Created a new approach for robotic actuators (3 patents self-filed patent, 1 issued already); formed a large ANA Avatar XPRIZE contest team creating an avatar system: remote telerobotics for home healthcare & elder care, travel.
Working with Linux, ROS, ROS2, WebRTC, WebSockets, Oculus Quest, mechanical design.

Experience

Exploratory projects   **Sunnyvale, CA / Vallejo, CA   4/2020 To Present**
   WebXR, *Android, React, React Native, WebRTC, Google Cloud Platform (GCP), TileDB.*
   Linux, Oculus Quest app, ROS, ROS2, CANbus, WebRTC, websockets, Ortelio cloud robotics, C++, Python, JS.
   Mostly ready to be certified as a patent agent. AR/VR/RR. Trained on Udacity's robotics curriculum.
   Chatbots, NLP, translation, GAN, video scene understanding.

Toyota - Woven Planet, Renovo Motors - Senior SW Engineer - UI / full stack 2.5 yrs Palo Alto   9/2020-2/2023
   Supported AV / ADAS / ECU development support work through time series & data lake database query & visualization app, including video + radar scrub.
   Led UI team rewriting & extending management & visualization UI for ADAS (advanced drivers assistance systems - self-driving / autonomous driving technology) research support. *React, webpack, lerna, GraphQL, WebSockets, GoLang, AWS, Docker, Kubernetes, Grafana, Postgres / RDS, Timescale, Influx, NATS, MQTT. Providing other technical architecture & detailed support as needed: security architecture, scalability, Linux, embedded.*
   Investigated HTTP/3, WebTransport, communications visualization, bazel, C++, rust, flutter, R-Car.

Yebo Technologies, formerly: Change My Path - CTO/founder   San Francisco, CA   *5.5 yrs* 10/2014 To 04/2020
   https://helloyebo.com/ Demo video: https://sdw.st/y.mp4 https://cped.co/d
   Creating a scalable self-reinforcing social education platform, entertainment with learning to solve the job skills training gap, meta-learning deficiencies, and later to revolutionize life-long learning in general. Sourced near-shore team members in Mexico & Honduras. Negotiated & closed sales, pitched to investors, board meetings.

   For several years, I have been building an ambitious single page web app, a complex integration of 3D game engine (WebGL, ThreeJS), 3D editor, video, rich text editing, slides, and scripting in a highly responsive web app using web

components. Several tools published as open source: Merkle Hash web cache builder, completely new panel responsiveness system, async module loading system, Docker, websockets, graph database based app stack.

Deep Javascript, web dev, CSS, full-stack, webGL, ThreeJS, WebComponents, Polymer, Lit-Element/Lit-HTML, haproxy, nginx, docker, dgraph, NodeJS, AWS, Auth0, Cloudinary.
Instructional design R&D, novel theory of knowledge - concept morphology, invented "panel responsiveness", Merkle hash web cache system, no-build web module load system, anti-browser memory leak techniques.

Pelican Imaging - Director Software Engineering   **Mountain View, CA** *2.5 yrs* **4/2012 To 10/2014**
Building embedded software and SDK for revolutionary depth array camera technology for mobile devices.
- Screened and interviewed hundreds of candidates. Developed a particularly revealing Socratic interview problem.
- Solved numerous management, product, and technical problems while managing and working with technical teams, direct and offshore. Acted in management, product, team lead, and deep hands-on development roles.
- Suggested and drove key product, product marketing, optimization, imaging, computer vision, technology, and methodology ideas, features, and implementation details. Overseeing IT, saved approximately $100,000.
- *C++11, CMake, apps & dev for Android / web / Qt - MacOS / Qt - Windows. Movidius Myriad 1, JavaGlue, Java*

GREE / OpenFeint - Principal Android Engineer   **Burlingame/San Francisco, CA / Tokyo**   **10/2011 To 3/2012**
Built new generation social gaming and casual gaming platform API for Android.
- Building concise API for game developers use of GREE / OpenFeint social and casual game support features.
- Support Android, mobile (iOS), and scalable server architecture and development environment and process.
- Implementing OAuth, JSON, image acquisition, and other capabilities on Android.

Sony Electronics - Consultant   **San Jose, CA** *contract max* **1.5yrs** **5/2010 To 9/2011**
Mobile & desktop eReader - Android, Qt/C++, OAUTH, XML, Adobe RMSDK, DRM, Java, C++, Eclipse, CMake
- Heavy problem solving, developed new eReader app for Android in Java & C++ and desktop in Qt and C++.
- Reading view: 2 page mode, RtoL, zoom/pan, page-flip anim., prerender, font swap, bookmarks, and highlights.
- Implemented all of OAUTH, multi-threaded apps, DRM, Android, Qt applications.
- Created a DOM-like XML parser in Java from scratch with a Java-optimal API, built-in SAX parser.
- Forked the XBig Java->C++ integration code generator to become the JavaGlue project.
- CMake system: MacOS/Linux/Windows/Android, C++/Java/Java->C++/C++->Java, multi-project..

High Performance Technologies, Inc. - Senior Technical Director **Arlington, Reston, VA** *~8yrs.* **10/2001 To 1/2009**
Development, security, and consulting for 5 main agencies / projects (US Treasury, HHS, DOJ, DoD ATL, unnamed, DoD HPC), several additional exploratory projects and agencies.
- Active and successful in architecture, development, consulting, management, business development, proposal writing, market and technology research & evaluation, technical interviewing, and program assessment. Projects:
- Army supercomputers, temporal graph analysis, W3C Efficient XML Interchange, DoD Acquisition review team
- DOJ CIO PKI/Security, HHS PKI CA, Treasury FMS Secure Payment System
- Qt/C++, Java, Javascript, Linux, HPC / supercomputers (Cray)

Previous experience:

Concinnous Consulting, Inc. **- Owner / Senior Consultant**   **Ashburn, VA** *8 yrs.* **2/1992 To 9/2001**
Geico, Chief Architect Geico's first viable web auto insurance quoting system. MPEG4 File Format encoder.
Contracts:
America Online, Inc., Senior Consultant   **Tyson's Corner, Reston, Dulles, VA** *3 yrs.* **4/1995 To 5/1998**
Developed Buddy List. Part of Smithsonian permanent collection. Created video IM system **- Instant Images, first for large video IM service.** Digital notary, **rate-based protocol video streams.**
Bank of America, Consultant Firewall and internal and external web servers - **first public web server for any bank**.
Lexis-Nexis, Consultant *3 yrs.* Feed search engine in C++, RDBMS. Stock quotes in C++, satellite data reception.

Jabber.com**, CTO**   Enhanced features, roadmap for extending Jabber's open IM/Presence system.
Insta.com**, Founder**   Fusion of presence, instant messaging, dynamic web pages, and customer service.
ReverseAuction.com, CTO Architected auction web application, resulting in successful release, scaleup.
GE Aircraft Engines *2.5 yrs.*   Distributed process diagnostic, recovery. Ported g++, Emacs, Kerberos to HPUX.
Computer Sciences Corp. *1 yr* Created language, forms in C++ much like today's HTML Web forms, inline scripting**.**
GE Lighting *1.5 yr* Embedded control bulb machine. New class of bulb: **half of the re-lighting Statue of Liberty in 1986.**

Education & Training

- American University - **Master of Science, Computer Science** - 4.0 GPA (completed 2013)
- Stanford online: AI: Thrun/Norvig, Machine Learning: Ng; audited: Robotics, Graph Reasoning, Discrete Math
- CISSP 54017, NSA INFOSEC Assessments, Lifetime AAAI. FBI Infragard. IETF, W3C, Certified Scrum Master

Innovation Highlights

- 2022: Self-filed a new robotic joint approach combining low cost / noise / weight with strength, simplicity, 3D printable, few parts, compact support of multiple joints.
- Patent published SPIVT robotic actuator: filed pro se. Patentable novel web panel responsive algorithm.
- Patent issued for image to texture in 3D games, contributor. Patent filed on May 2010 eReader features.
- Independently invented CAPTCHA in 1999. Created IM-based multi-person video chat system at AOL.
- Wrote & scaled AOL's Buddylist, inventing independent claims in AOL's Buddylist patent US7454709.
- Founded early ISP, have run Internet servers continually since. Implemented satellite delivery of Usenet.

Examples

github.com/sdwlig - W3C XBC Measurements Methodology - W3C EXI Measurements Note - ESXML

I run multiple half marathons and other races every year, biking, mountain hiking, kayaking, sailing, and inline skating. I have run at least 20,000 miles. I am a private pilot, PADI scuba certified, rock climb, ski, and snowboard. I'm an avid semi-pro photographer: over 100,000 photos taken globally.

One of my publishing venues:
https://medium.com/missed-points https://medium.com/optimalogic
Recent articles:
MetaRules Workflow Engine
Uniform Resource Assets — URA
Complexity Simplification Escalators
Session vs. End-to-End Encryption
The Application Level Window Signaling (ALWS) pattern you probably need
Executive Summary, tl;dr, Abstract; tl;wa
The Promise and Realities of Technical Education: Computer Science
Deep security without VPNs
Sentience Levels: Emotion, Logic, Empathy, Synthesis