Steven Willoughby | CISSP

6936 SW 184th Ave – Aloha, OR 97007

📞 +1 (503) 522-7491 • ☎ +1 (503) 848-8006 • ✉ steve@alchemy.com

🖥 www.alchemy.com/~steve
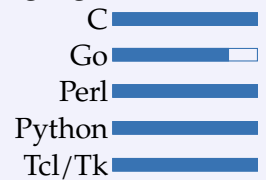
Effective fusion of software development and application security
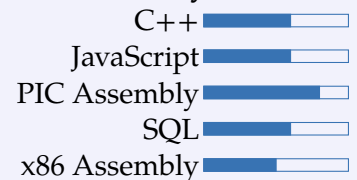
Accomplishments and Experience

- **Telemetry Collection.** Developed components for Linux telemetry measurement software deployed on 23 million systems worldwide, collecting 2Tb/day of data, to provide valuable insight for system trouble identification and marketing trends. **Planned and drove** effort to remove technical debt in project by merging divergent code bases into a single multi-platform product. Implemented in C to interface with low-level system resources while maintaining a minimal footprint and **negligible impact** on the system, with particular attention to preserving **security** of client systems and user privacy.

- **Enterprise Development.** Developed numerous enterprise infrastructure applications including authentication administration, document creation and management, email services, and a full-stack ticket tracking system for the computing support group. The latter was designed to meet customer needs first, with management metrics and graphs being secondary to that goal. As a result, the support team rose from necessary burden to be tolerated to a valued and effective partner in the eyes of their internal customers due in large part to the improved communication and accountability facilitated by the system.

- **Critical Infrastructure Monitoring.** Managed and maintained software for tracking of health and utilization data for pool of 10,000+ compute servers, enabling design teams to achieve the most optimal usage of every available cycle. This enabled critical product design work to progress as needed.

- **Application Security.** Set corporate standards for internal-use application security practices. Established and led developer training initiative reaching 300+ developers, and code certification process for internal applications, reducing vulnerabilities by factor of 5 among 1500+ applications. Effected **culture shift** among IT developers, evolving their mentality from security as an afterthought to being an up-front design driver. To support the training initiative, leveraged developer skillset to implement Capture The Flag (CTF) game framework, which successfully encouraged users to engage in the learning process and up-level secure development awareness.

- **End-to-End Results.** Passionate about ensuring the **best possible user experience** with any project from applications to security infrastructure, driven to fully comprehend user needs, validate results, and **fully document** both the internal architecture and the user-facing manuals to a high professional standard. Each project is carried through to production with oversight and support. This enabled the other projects mentioned above to be successful by avoiding overhead due to handing off an untested solution to another group to handle on their own.
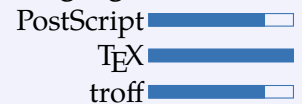
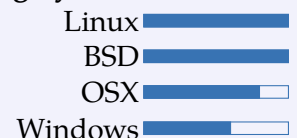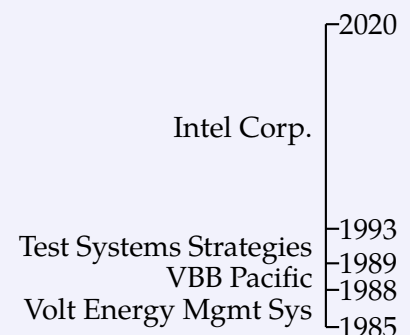### Skill Proficiency Levels

Main Languages
- C
- Go
- Perl
- Python
- Tcl/Tk

Secondary
- C++
- JavaScript
- PIC Assembly
- SQL
- x86 Assembly

Specialty Languages
- PostScript
- TeX
- troff

Operating Systems
- Linux
- BSD
- OSX
- Windows

Methodologies
- Agile Methods
- Test-driven Dev

Employment History

Year	
2020	
	Intel Corp.
1993	Test Systems Strategies
1989	VBB Pacific
1988	Volt Energy Mgmt Sys
1985	

- **IIoT Security.** Enabled implementation of IIoT and smart building technology to power Intel Corp's showcase office building in Petach Tikva, Israel [LINK] by leading security reviews for those devices, including **threat modeling**, evaluating security profile of individual products and technologies, and **end-to-end risk analysis** of use cases to be employed. Effectively partnered with building facilities, IT, health and safety, and other teams to reach a working solution together. Throughout, the focus was how to enable the business to innovate "**fast, but safely**" rather than to see security as an obstacle to business. The result was the deployment of state-of-the-art workplace automation, sporting 14,000 sensors generating 50–100 Tb of data daily, without compromising privacy, safety, or security.
- **Systems Administration.** Managed all aspects of servers, workstations, and networking for 50-person office employing Unix-based systems, Windows PCs, Macintoshes, and VAX workstations. Created TCP/IP debugging software and other tools as needed. Created product installation software for delivery to customers. After moving to Intel Corp, **scaled up** effectively to meet the needs of a large corporate environment, managing file server array and email services for a department with thousands of servers and client systems, enabling critical processor design work to proceed successfully.

Portfolio of Personal Projects

- Computerized power control (e.g., light displays, automation, etc.): schematics [LINK], hardware manuals [LINK], firmware source code [LINK], user application source code [LINK].
- Examples of user manuals: table-top game software [LINK], database library [LINK].

Publications and Presentations

S. Willoughby. *CTF@Work, School, or Anywhere: How Organizations Can Use Games to Improve Security Awareness.* BSides Portland Security Conference, Portland, Oregon. October 2018. [VIDEO]

R. Colby, P. Donohue, S. J. Meyer, R. Patel, S. P. Shenoy, and S. Willoughby. *Horizontal IoT Platform Paves the Way to Enterprise IoT Success.* IT@Intel white paper, Intel, February 2017. [LINK]

S. Krishnapura, B. Bohling, W. Giard, A. Huber, V. Lal, L. Minas, J. Moore, J. Price, and S. Willoughby. *Utilizing PaaS for Business Agility and IT Efficiency.* IT@Intel white paper, Intel, April 2016. [LINK]

P. Lancour and S. Willoughby. *Inside IT: Developing Applications with Security Built-In.* Connected Social Media: The Intel Channel, Podcast: IT Best Practices, Episode 82. August 2014. [LINK]

S. Willoughby. *Organizing the Chaos: Managing Request Tickets in a Large Environment.* Proceedings of the 13th Large Installation Systems Administration conference (LISA XIII), pp. 51–66. USENIX, Seattle, Washington. November 1999. [LINK]

Education

Portland State University **Portland, OR**
Working on Ph.D., Computer Science *2017–present*
Currently pursuing a Ph.D. degree, researching applied information security.

Portland State University **Portland, OR**
B.S., Computer Science, Summa Cum Laude *2016*

Certifications

(ISC)^2 CISSP, GIAC GSSP-JAVA (expired), GIAC GWEB (expired), SAFe4 (expired).

Other Activities and Interests

Electronics design hobbyist, open-source projects including computerized power control, on-line multi-player MUD game, tabletop game support tools, and network-model database library. Eagle Scout. Amateur radio operator.