BRIAN STERN

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Professional Summary

Experienced technical leader with 25+ years of delivering high-quality software designs to high-profile companies (Microsoft, Intel, Expedia) on large highly complex products (including Pentium® 4 CPU, .NET Framework runtime, search engines), as well as smaller startups. Extensive application and embedded programming experience with C/C++, C#/.NET Framework, and Win32 libraries. Deep knowledge of test methodologies and best practices, including unit, security, scalability, usability, stress, code coverage, and performance verifications.

Education

University of California, Berkeley	Master of Information, Data Science	Expected Dec. 2025
University of Washington, Seattle	Bachelor of Science, Computer Engineering	1991 – 1996

Technical Skills

- **Programming languages**: C, C++, C#, SQL, Python, R, Perl, MATLAB, Visual Basic, .NET IL
- **Development environments:** Visual Studio, IAR Embedded Workbench, SlickEdit, Linux
- **Frameworks:** Win32, .NET Framework, ASP.NET, NumPy, Pandas, NUnit, MSTest
- **Source control:** Git/GitHub, Subversion, Perforce, Azure DevOps, SourceSafe
- **Embedded:** ARM Cortex-M, FreeRTOS, I^2C, SPI, JTAG, UWB, LoRa
- **Specialty skills:** CPU emulation, 3D geolocation, linear algebra

Professional Experience

Senior Embedded Software Engineer 2018 - Present

Chronos AI - Remote

- Authored several key components of firmware in C, used to deliver 3D geolocation without GPS or external infrastructure.
- Designed firmware module to perform ranging measurements between multiple instances of hardware over SPI, via UWB radio communications by calculating signal time-of-flight.
- Owned and developed positioning module, calculating 3D positions in space via fusion of multiple sensors including ranging distances between nodes as well as inertial and environmental pressure measurements, achieving sub-1m accuracy under most conditions.
- Developed library used to route communication packets between nodes with multiple hops, utilizing a proprietary 3-layer packet protocol.
- Created software application to visualize inter-node communication across multiple radios, allowing development team to diagnose overlapping communications and optimize wireless message timings for optimal throughput.
- Verified and debugged behavior of positioning module both in Linux emulation environment (modeling real-life sensor properties) and via JTAG in physical modules.

Professional Experience (continued)

Senior Software Design Engineer 2015 - 2019

Newport Brain Research Laboratory - Remote

- Designed and developed several HIPAA-compliant software applications in native Win32, used to treat a wide range of neurological disorders. Software is used across 22 medical clinics, including at the **US Department of Defense** and the **USC Center for Neurorestoration**.
- End-to-end development of several key software components, including requirements gathering, architecting, and implementation of the following applications:
    - EEG capture - software enabling technicians to capture patient EEGs. Controlled hardware of Deymed TruScan EEG devices. Displayed real-time data in multiple views, allowing technician to easily manage channels, tune amplification, and add annotations.
    - Business management - software to allow technicians and physicians to manage patient's electronic medical records, as well as calendars to visually manage scheduling of resources (patients, technicians, rooms, and equipment).
    - Administration - software allowing full management of system users, clinics, patients, and clinical trials, as well as producing reports for office managers and physicians.

Test Manager 2009 - 2015

Expedia, Inc. – Bellevue, WA

- Managed team of 6 Software Engineers to create and improve test automation framework for multifaceted flight search engine analysis.
- Recognized as primary technical leader for flight search engine test team's test automation development.
- Championed high-quality code reviews across the team and drove developer-quality practices (robustness, maintainability, debugability, configurability) into test code.
- Overhauled significant portion of core test automation framework code to incorporate these practices.
- Architected broad set of automation tools in C# to perform and manage complex bulk flight request generation and execution, and corresponding ASP.NET web tools for advanced result analysis. These tools have **reduced end-to-end run execution and analysis time from days to hours**.
- Planned and executed functional testing and automation for numerous flight selection and pricing features.

Software Development Engineer / Test 1999 - 2008

Microsoft Corporation – Redmond, WA

- Drove functional and penetration security testing of the .NET Framework runtime, including the Code Access Security model, bytecode verification (ensuring program correctness and runtime type safety), and cryptography libraries. Tests were designed in C++, C#, and pure .NET IL.
- Owned functional, performance, and stress testing for the .NET Framework runtime's Garbage Collector, an extremely complex and high-performance runtime memory manager.
- Implemented and enforced runtime-wide security reviews for all new features across both development and test disciplines.
- Designed specification for a rule-based approach for automated layout verification of a graphical document. **Received US Patent 7756333 for the design.**
- Developed tool to compare internal state between Visio documents, used by test and development team to uncover and debug complex bugs.
- Drove code quality improvements into Visio's development process by championing code coverage and static and runtime code analysis tools and integrating them into Visio's test and development environments.

Professional Experience (continued)

Hardware Validation Engineer 1996 - 1999

Intel Corporation – Hillsboro, OR

- Coordinated the validation effort for the first-level cache controller unit on Intel's Pentium® 4 microprocessor and designed complete validation plan for unit.
- Developed protocol checkers to verify proper operation of key cache controller algorithms.
- Debugged failing simulations in microprocessor's memory subsystem to bugs in implementation of microarchitectural specification.
- Supervised the evaluation of Intel's Pentium® MA430VX and Pentium® II NX440LX motherboards. Wrote complete evaluation plans for both motherboards.
- Co-designed and tested chassis tamper detection circuit for NX440LX product. **Received US Patent 6014747 for the design.**
- Investigated methods to reduce board failure rate at production site.

Side Projects

JET 2007 - 2008

- Contracted with HanaHo Games to co-develop JET, a multi-game hardware/software entertainment system for classic arcade game enthusiasts.
- Fully designed and developed Jukebox, a media player (supporting MP3 and WAV file formats, including ID3 tags) for the JET product, including UI, file decoding, music resampling and playback, and a mini game.

Extreme Arcade 2007

- Contracted with HanaHo Games to co-develop Extreme Arcade, a stand-up multi-game arcade cabinet, emulating 50 classic games. **Product was sold by Sears during 2007 holiday season.**
- Developed emulations of over half the games' external hardware.
- Debugged game inconsistencies to hardware or microprocessor emulation bugs.

Retrocade 1998 - 1999

- Collaborated with several programmers across the country to develop Retrocade, the highest-performance multi-arcade game emulator for the PC.
- Designed emulators for full instruction sets of 6502 and i8039 CPUs (designed to work on multiple platforms), as well as emulations of various games' external hardware. The 6502 emulator is also licensed to be used in a Nintendo Entertainment System emulator.
- Debugged game inconsistencies to hardware or microprocessor emulation bugs.