# David Dantowitz

Cupertino, CA ■ david@dantowitz.com ■ (628) 400-2633 ■ linkedin.com/in/Dantowitz

## Objective

Seeking a software development role applying computation, algorithms & research. Interests in parallel computing, computer architecture, verification of new hardware / silicon & increasing software performance!

## Summary

Algorithm-oriented software developer with decades of experience, skilled at achieving performance-focused solutions & unearthing optimizations. I thrive at the lower levels of technology stacks, refactoring code bases & creating significant performance breakthroughs. I enjoy working on parallelizing algorithms and data structures.

## Experience

**Independent Research and Development, Cupertino, CA** June 2025 – present

Optimizing single and multi-threaded parallel algorithms related to data indexing. Also updating a database search engine using OpenMP and a custom thread library.

**Apple, Cupertino, CA**

**Senior Software Engineer, Proactive Intelligence** Feb 2019 – June 2025

DRI on several initiatives. Developed & re-architected a key storage infrastructure used by Apple Intelligence & applications for sensors, device events, metadata and on-device personal data across all Apple Devices (Objective-C).

- Redesigned the API's storage architecture, improved random access performance from linear to logN & increased storage efficiency by up to 44%, reducing CPU, power & SSD use
- Developed a new algorithm & prototyped device to device synchronization, achieved a 7-to-9x speed-up over the existing method and reduced temporary storage by 92%
- Resolved a threading collision by designing an algorithm to maintain coherency under significant loads
- Submitted two idea disclosures for patent consideration related to storage & data sharing
- Developed several stochastic testing approaches to reproduce bugs at scale that were difficult to observe
- Developed a privacy-preserving tool to identify & document software bugs, removing the need to copy files containing personal information into reports
- Optimized performance for an API that merged multiple data sources from $N^2$ to NLogN
- Proposed suggestions for improved methods for performance, monitoring tools & test methods
- Simplified & restructured code, improved concurrency issues, changed to more compact data encoding, reduced system calls, remove scanning of empty data entries & re-wrote legacy code

**Founder / Senior Software Developer / Work from Home Dad, Millburn, NJ** May 1995 – Dec 2018

Founded a consulting firm to manage and develop custom software for Fortune 100 & smaller clients for marketing, games, contests, education & graphical user interfaces (GUI), designed & built internet server software for databases, search engines & email

- Created ZipBurst™, licensed by Apple and others for over a decade. A full-stack multithreaded, geospatial, web database / search engine with hosting as an optional service. In addition to being an MVCC, NoSQL database with relational queries, and access to external data sources, ZipBurst included two internal languages & interpreters, one for formatting web pages & one for micro-tuning queries. For Apple it was an order of magnitude faster than the software it replaced.
- Created MailBurst™, an advanced add-on mail routing tool for Apple's Internet Mail Server (AIMS), enabling multi-domain support years before it was added to AIMS, along with other email processing features
- Created FaxBee™, an email-to-fax gateway, supporting mail merge & web forms to FAX
- Created The Apache-Apple Event Bridge™, connecting web requests via Apache with macOS applications
- Led development for web & CD-ROM projects, partnering with producers, designers & content creators for clients including AT&T, Aaron Marcus & Associates, American Airlines / SABRE & The Voyager Company, delivering marketing tools, online contests, games, graphical user interfaces & prototypes for next-gen systems

**InterActions Media / Publicis, New York, NY**
**Vice President, Software Development & Co-Founder** Sep 1998 – Oct 2002
Developed solutions for pharma, education & marketing in the form of interactive eBooks, CD-ROMs, games, contests, surveys & a physician-used handheld app for secure data collection via a Palm device

- Delivered 25 digital products, with a team of developers, designers & managers, scaling from 2 to 11
- Designed & launched an early cloud-based presentation platform, enabling live audio & image broadcasting to remote audiences before the video conferencing era
- Built an original pinball physics engine for an MTV marketing campaign featuring a new music video

**Additional Software Development Experience**
Held individual contributor / consultant roles at the Peter Norton Computing Group (Symantec), Citicorp Transaction Technology, Graphex Imaging, Ehrlich Multimedia (Times Mirror Company) & Digital Equipment Corporation (DEC)

- Working with hardware teams developed software for CPU architecture verification (CISC & RISC) using stochastic methods at Digital Equipment Corporation, for CPU simulators, pre & early-silicon testing & production hardware (4 years)
- Designed a goal-seeking, custom language and interpreter to represent & test Citicorp ATMs (Automated Teller Machines) automatically via a robotic arm
- Ported a PostScript interpreter from Windows to Mac & Unix at Graphex Imaging, increasing the image resolution from 300 to 1200dpi & addressing rendering issues that did not occur at lower resolutions
- Drivers for custom hardware, BIOS patches, and interrupt handlers

## Technical Skills

**Expert** C, multithreading, concurrency, code optimization, stochastic & automated testing, algorithm design, efficient data organization & access methods
**Proficient** Objective-C, OpenMP, Python, simulation engines, assembly language

## Education

**University of California, Los Angeles, CA (UCLA)**
Graduate studies in Computer Science, advanced to candidacy (course work complete) for MS degree, 3.71 GPA, parallel discrete event simulation, fault-tolerant computing, advanced computer architecture & a member of the ACM programming competition team for 2 years

**University of Massachusetts, Amherst, MA (UMass)**
Bachelor of Science in Computer Science, 3.92 GPA, Phi Beta Kappa
Dean's List all semesters, Alumni Scholar, Teaching Assistant for assembly language course
Concentration in operating systems, computer graphics & numerical analysis and computation

## Innovations

- Designed a multithreaded, message-based, event-driven simulation engine for a shared memory parallel supercomputer, similar to MPI
- Optimizations (10x) in search index generation, improving search performance for dynamic data sources
- A faster algorithm for string search, matching Damerau-Levenshtein distance results
- Optimized CRC computation, annotated source placed in the public domain, used in several apps & cited in: "The Virus Intervention & Control Experiment" by Molini & Ruhl, (13th National Computer Security Conference) reducing the impact of PC viruses at NASA's Johnson Space Center

## Hobbies & Interests

A cappella music, musical theatre, science fiction, magic, bonsai, homemade ice cream