

CRAIG DOWELL

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STAFF SOFTWARE ENGINEER

Software engineer with over twenty years of professional experience and a proven record of success taking products through the entire life cycle in commercial, scientific and startup environments. Experience in system, network, control, real-time and embedded software and diagnostics development; with a top research university, at large research centers, and with global leaders in computer technology. Eight patents. Background includes experience in computer science, physics, mathematics and electrical engineering.

Expert-level knowledge of networking, system, control, embedded and real-time systems. Excellent analytical and problem resolution skills. Detail-oriented. Experienced in requirements definition and release management. Comfortable producing documentation at all levels. Diverse experience provides unique insights in complex situations.

CORE COMPETENCIES

Object-Oriented Design • Client/Server & Distributed Systems • Protocols • Device Drivers
Embedded & Real-Time Systems • Multithreading & Multiprocessing • Simulation & Emulation
Validation & Verification Testing • Debugging • Requirements & Performance Analysis

SELECT TECHNICAL SKILLS

C++ • C • Python • Java • Tcl/Tk • Unix • Linux • Android • Mac • Windows • Gnu Toolchain

PROFESSIONAL EXPERIENCE

QUALCOMM INCORPORATED, Seattle, Washington • 2010 – Present **Staff Engineer – Qualcomm Innovation Center**

Member of a team designing open-source networking systems to enable connectivity services for smartphones, mobile devices and desktop systems (Android, Linux, Windows).

- Designed and implemented a lightweight IP-based multicast service discovery system.
- Designed and implemented a fair queueing mechanism for RPC over TCP.

UNIVERSITY OF WASHINGTON, Seattle, Washington • 2006 – 2010 **Senior Software Engineer & System Programmer – Dept. of Electrical Engineering**

Serve as key member of international team of scientists and engineers designing and implementing open-source discrete event simulation tool for large-scale internet research and analysis: the ns-3 Network Simulator Project.

- Played major role in system requirements definition, architecture, design, implementation, documentation, testing, release, and maintenance.
- Defined unified system architecture and user conceptual model for ns-3; developed consistent object and memory management models for system; provided users with wide variety of capabilities to successfully use ns-3; designed powerful and easy-to-use APIs.
- Enabled real computing nodes to interact with simulated networks and vice-versa, designing and implementing device drivers, real-time simulator, and various emulation models.
- Wrote large part of system documentation, both in code and external, including tutorials and manuals.
- Designed and implemented test and validation environment for ns-3 system.
- Authored a distributed framework to orchestrate internet simulations across both simulated and real systems and networks including popular virtualization solutions such as VMware, VirtualBox, and OpenVZ.
- Embedded system for automatic calibration of a positron emission tomography scanner (UW IRL),

MICROSOFT CORPORATION, Redmond, Washington • 1992 – 2000

Senior Software Development Engineer

Designed multimedia systems in Advanced System Group. Developed object-oriented frameworks, file formats and network protocols for multimedia. Worked on various special projects. Coordinated with research and product groups.

- Created web video streaming capability on Windows platforms.
- Served as key member of research-based team developing Tiger Video Server cable head-end; applied design to proof-of-concept project implementing video on demand system for Japanese city.
- Designed and implemented componentized media system used in Microsoft ActiveMedia products; enabled streaming of various kinds of video and related information across internet.
- Collaborated with researchers on implementing MPEG-4 codecs for low bandwidth video.

ADDITIONAL PROFESSIONAL HISTORY

IBM CORPORATION (Metaphor Computer Systems), Mountain View, California • 1983 – 1992

Senior Staff Engineer

- Deliver entirely new and untested hardware and software, and write system and unit diagnostics.
- Embedded system development.
- Advanced to architect, designed and implemented new networking products, and maintained most DIS-related system software.
- Network architect and group manager in team designing object-based system to componentize Metaphor distributed system software.

NOTE: Educational leave taken (2001 – 2005) to develop skills in mathematics and physical sciences. Kept current in software development by developing software for particle accelerators (The Large Hadron Collider at CERN), and embedded system development for PET scanners at UW IRL

EDUCATION & PROFESSIONAL DEVELOPMENT

Master of Science in Physics

University of Washington, Seattle, Washington

Bachelor of Science in Physics (Dean's List & With Distinction)

University of Washington, Seattle, Washington

Higgs-Osborn prize for Experimental Physics • Large Hadron Collider System Software

Associate of Arts & Sciences in Mathematics (Dean's List & With Honors)

Bellevue College, Bellevue, Washington

Phi Theta Kappa Honor Society

ADDITIONAL EDUCATION

Embedded and Real-time Systems – University of Washington Professional and Continuing Education

C, C++ Programming – Stanford Center for Professional Development

Electronics & Programming – Diablo Valley College

Electronics & Avionics – Naval Air Technical Training Center (2nd in class)

US PATENTS

Multimedia Synchronization (#5,661,665)

Active Stream Format for Holding Multiple Media Streams (#6,041,345)

Wire Protocol for Media Server System (#6,339,794 & #6,466,987)

Loss Tolerant Compressed Image Data (#6,608,933)

Active Stream Format for Holding Multiple Media Streams (#6,763,374 & #6,836,791)

Wire Protocol for Media Server System (#6,865,610)

PROFESSIONAL MEMBERSHIPS

Institute of Electrical and Electronics Engineers • Association for Computing Machinery
American Physical Society • American Institute of Physics • Mathematical Association of America