VITA
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PROFESSOR: Professor of Computer Science
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EARNED ACADEMIC DEGREES:

1971 - 1975 UNIVERSITY OF ILLINOIS, Urbana, Illinois
M.S. Computer Science, 1975
Ph.D. Computer Science, 1975

1967 - 1971 SEATTLE PACIFIC COLLEGE, Seattle, Washington
B.S. Mathematics, Magna Cum Laude

PROFESSIONAL MEMBERSHIPS:

Association for Computing Machinery
SIGCSE – Special Interest Group, Computer Science Education
CCSC/NW Consortium for Computing Sciences in Colleges

ACADEMIC PROFESSIONAL EXPERIENCE:

Seattle Pacific University
1987 to present - Professor of Computer Science, SPU
1980 to 1987 - Associate Professor of Computer Science, SPU
1980 to 2007 - Chairman, Computer Science Department, SPU
1980 to present - Computing Lab Manager and Coordinator, SPU

- Taught most courses in the computer science undergraduate major.
- Emphasis in
  - Operating Systems programming, design and implementation, particularly concurrent processes, synchronization and parallel algorithms.
  - Programming Languages, concepts, theory and examples.
    C, C++, Python, PHP, HTML/CSS/JavaScript, C#, ASPX, Java, JSP.
  - Algorithms and problem solving approaches.
  - Windows™ applications and GUI programming, MFC and .NET programming.
  - Python scripting and applications programming, GUI frameworks.
  - Website client and server programming. Frameworks for reliable and efficient client-side and server-side web application implementation and programming.
  - Compiler design and implementation. Formal language theory.

- Student Academic Advisor, including transfer and post-degree students.

- Completed computer science undergraduate curriculum revision in 1981 (based on ACM '78 undergraduate curriculum guide). Researched and designed all revisions, prepared course syllabi and outlines for all courses, prepared justification and impact assessment proposal, and taught nearly all of the courses.

- Directed and participated in numerous subsequent revisions to the curriculum over many years, responding to the rapid-changing discipline of computer science and technology. Primary author of the NWASC accreditation Computer Science departmental reports in 1985 and 1995. Primary author of the Computer Science departmental plan document in 2000-2001.

- Introduced new courses in Microcomputer Systems, Systems Programming with DOS, Systems Programming with Win32, Windows GUI Programming, Windows MFC Programming, Windows .NET Programming, Object-oriented Design and Programming, Java language programming, network socket programming, NetCentric / Web Computing and Programming.

- One of the primary planning administrators over many years for instructional computing equipment and laboratories, including usage projections and load distribution, lab personnel management, equipment selection.

- Chair, SPU Faculty Affairs committee, 1997 - 2000. Policy and oversight on faculty-related issues, including compensation, contracting, tenure and promotion criteria and procedures, and the Faculty Handbook.

- Chair, SPU Faculty Compensation Task Force, 1999 – 2001. The Task Force developed a comprehensive plan for faculty salary compensation. Presented and approved by Faculty Senate in Spring 2001.

- Site Chair, CCSC/NW Consortium for Computing Sciences in Colleges, 2002

Colorado State University
1975 to 1980 Assistant Professor of Computer Science
Colorado State University, Ft. Collins, CO

- Taught graduate courses in compiler design and systems programming, in addition to teaching undergraduate courses in various programming languages, data structures, and systems programming.
- Curriculum committee, Equipment committee.
- Graduate Colloquium Coordinator.
- Supervised 8 Master's thesis students.
- Research activities in High Level Language Machine Architectures, Compiler Error Analysis, and Microprocessor Systems.
- Program Chairman for the Second Rocky Mountain Symposium on Microcomputers (1978). Symposium Co-Chairman for the Third Rocky Mountain Symposium on Microcomputers (1979). PROCEEDINGS Editor for the Third Symposium.

ACADEMIC AND PROFESSIONAL CREDENTIAL EVALUATION EXPERIENCE

- Have conducted expert opinion evaluations on the United States equivalency of the academic and professional work experience credentials of foreign nationals for US immigration purposes, specializing in various computing, information systems, and engineering equivalencies.

CONSULTING PROFESSIONAL EXPERIENCE

Computing Systems Design Consultant and Software Engineer

2006 - 2009 Industrial computer consultant with the Woodward Governor Company, Ft. Collins, CO.

- Development and revision of Ladder Logic real-time control software application using Visual Studio.NET v2005 and managed C++. Significant internal revision to an object-oriented design using a .NET Forms-based application framework.

2005 EOScene, Inc.

- Worked as part of a developer team on a Java-based web-enabled compliance data management system in the medical industry.

2004 Applied Voice and Speech Technology

- Developed efficient RPC remote procedure call communication protocol to support networking communication and synchronization requirements for a large telephony application.

2003 Wavelink Corporation, Kirkland, WA.

- Mobile Manager Wireless Access-Point control and management package. Worked on multi-threaded application components, synchronization issues, application profiling and performance tuning. Developed custom STL-compatible string implementation.

2002 Applied MicroSystems Corporation, Libra Division, Redmond, WA.

- Specialized in custom real-time Linux embedded system design and implementation.
- Development project for the design and implementation of an extremely high speed server component operating with Gigabit-speed Ethernet and InfiniBand networks.

2001 FreeRein Corporation, Bellevue, WA.

- Specialized in mobile networking and communications. Investigated wireless connectivity for handheld PDA devices and network-enabled cellular phones. Worked on problems associated with the intermittent dis-connectivity that characterizes mobile networking, and developed solutions for persisting session connectivity with intermittent communication protocols.
- Developed prototype applications and configurations using the MOAB (Microsoft MObile Application Bridge).
- Web design and programming, particularly server-side systems with Microsoft IIS, XML and SSL components.

1999 to 2000 USWeb/CKS and marchFIRST Corporations, Kirkland, WA.

- Technical software and computer systems designer and consultant.
- Web design and programming. Server-side systems. Database systems. COM.
- Microsoft IIS and ASP.
- Linux systems, Apache, JSP, JServ, Java programming.
- XML and SSL processing and systems.

1977 to 1998 Industrial computer consultant with the Woodward Governor Company, Ft. Collins, CO.

- Extensive design and development experience with computer and microprocessor-based programmable industrial and embedded control systems.
- Sequential and continuous feedback control systems.
- Designed and implemented a full programming language for control system applications (WGSPL – The Woodward Governor Sequencer Programming Language). Language specification, compiler implementation, various run-time support systems.
- Designed and/or modified custom operating systems for real-time control system environments. Most significant was porting and implementing a real-time variation of the XINU operating system that supported multi-tasking process/thread concurrency, soft real-time scheduling and a sophisticated hard real-time rate-group oriented deadline scheduling algorithm. This effort included the design and implementation of a compiler-oriented translation and configuration component that analyzed and resolved various data-related synchronization issues that are inherent in concurrent process execution environments.
- Designed a sophisticated "control-system application" knowledge-based programming environment. Template-based design. Application-code generator that supports multiple target platforms.
- Designed a fast fixed-point math package for use in low-end processors. Implemented library support versions in C, and several processor-specific assembly languages (e.g., Intel 8096/8051/8086, Motorola 6800/68000/68332). The design was configurable to support various data representation formats in 16-, 32-, and 64-bit designs that traded off integer range vs. fractional precision, e.g., 8.8, 8.24, 16.16, 32.32.
- Design consulting for fault tolerant, high availability control systems.
- Designed and implemented numerous windows-based programming and systems-design "tool" applications to support control engineers.

Academic Research CONTRACTS and GRANTS:

- **Research grant, National Science Foundation**
  "Simplifying Software Development for Complex Microprocessor-based Systems"
  July 1979, $80,000. Duration: 2 years.

- **Symposium Sponsorship grant, US Army Research Office**
  "Third Rocky Mountain Symposium on Microcomputers"
  June 1979, $4,228. Duration: 1 year.

PUBLICATIONS:

Tindall, Weaver and Danielson, **A BASIC Language Interpreter for the Intel 8008 Microprocessor**, University of Illinois (Urbana) Computer Science Department report #UIUC DCS-R-74-658, 1974.

Report written while in graduate school, with 2 other students. Was extremely early paper on using microcomputers. Numerous copies requested from around the world.

Tindall, Davis and Wilcox, **"Interactive Error Diagnostics for an Instructional Programming System"**, Papers of the Fifth Technical Symposium on Computer Science Education, SIGCSE Bulletin, February 1975, Vol.7, No.1, pp 168-171.

SIGCSE is the Special Interest Group in Computer Science Education, of the Association for Computing Machinery (ACM). Al Davis and I presented this paper at the 1975 national convention.

Tindall, M.H., **An Interactive Table-Driven Parser System**, Masters Thesis, University of Illinois (Urbana), Computer Science Department report #UIUC DCS-R-75-745, 1975.

Tindall, M.H., **An Interactive Compile-time Diagnostic System**, Ph.D Dissertation. University of Illinois (Urbana), Computer Science Department report #UIUC DCS-R-75-748, 1975.

Wilcox, Davis and Tindall, **"The Design and Implementation of a Table-Driven Interactive Diagnostic Programming System"**, Communications of the ACM, Vol. 19, No. 11, Nov 1976, pp 609-616.

Joint paper with my doctoral advisor (Tom Wilcox) and another doctoral student (Al Davis). Culmination paper reporting the new ideas and results of dissertation research. Fully reviewed, and published in the most highly respected journal in computer science.

Tindall, M.H., **"A Student Project in Implementing an Intelligent Computer Terminal"**, PROCEEDINGS of the Developments in Science Education Conference (DISE), August 1976, Colorado State University.

Tindall, and Goke, **"BASIS for Simplifying Software Development for Complex Microprocessor-based Systems"**, PROCEEDINGS of the Second Rocky Mountain Symposium on Microcomputers, August 1978.

McNelly and Tindall, **Pascal Enhancements to Support Separate Compilation**, Colorado State University, Computer Science Department report, 1979.

Oldehoeft, Rod and Tindall, **"An Interactive Manager for Pascal Software"**, Software-Practice and Experience, Vol. 11, 867-873 (1981).

Software- Practice and Experience was a top quality, reviewed, international journal.

SCHOLARLY PROFESSIONAL ACHIEVEMENTS:

(mostly proprietary and non-publishable due to consulting corporate policies)

1981-1984: Woodward Governor Company, **WGSPL Programming Language**
Designed and implemented WGSPL, the Woodward Governor Sequencer Programming Language, a modern control-application programming language for real-time industrial control systems. Designed the Language specification, implemented the compiler translator and a complete run-time support system. The runtime system was ported to several hardware platforms, including Motorola 68xxx, Intel 80x96, and 80x86. WGSPL control system applications were developed and deployed until early 2000's.

1981-1984: Woodward Governor Company, **Application-Blocks CODER**
Helped design and develop an Application-Block oriented control system programming environment. I designed and implemented a sophisticated "control-system application" knowledge-based programming environment. Designed and implemented a comprehensive template-based design that continues to be utilized in 2015. Implemented an Application-code generator that supports multiple target platforms.

1981-1984: Woodward Governor Company, **WGOS Operating System**
Designed a custom operating system for real-time control environments. Based originally on XINU, the design was extensively customized for real-time system priorities and process scheduling and embedded-system resource management. Ported and installed WGOS on several hardware platforms, including Motorola 68xxx, Intel 80x96, and 80x86. Updated versions of this O/S design are still used throughout the Woodward control system development in 2015.

1985 – 1989: Woodward Governor Company, **Rate Group Scheduler**
Researched and developed a specialized scheduling algorithm for concurrent real-time processes. This algorithm solved problems of data coherency and consistency, and has proved to be a fundamental design that has persisted through numerous product generations and is still utilized in 2015.

1986 – 1990: Woodward Governor Company, **Fixed-point Math Package**
Designed and implemented an 8.24, 16.16, 8.8, 32.32 multi-format fixed-point math package, suitable for real-time control system usage on small processor platforms where floating point math is unavailable. The package proved to be immensely practical and useful, and continues to be deployed in product designs with limited-capacity controls.

1991-1992: Woodward Governor Company, **Service Control Panel**
Designed and implemented a field engineer control panel PC application that allowed for monitoring, configuring, and tuning deployed control system devices.

1991 – 1996: Woodward Governor Company, **ABLS Control Systems**
Helped design and develop customized embedded control systems for small engine environments. The control systems are very limited in processing power and resources, and the control algorithms must be highly optimized and efficient.

1997: Woodward Governor Company, **WGOS ported to Windows NT**
Ported the WGOS system to run as a customized task under the Windows NT operating system. Rate Group scheduling was customized as a special execution layer in the HAL Hardware Abstraction Layer of WinNT.

2006 – 2009: Woodward Governor Company, **Ladder Logic Programming System**
Modified and redesigned a Ladder Logic Programming System application as a Forms-based application under the Windows .NET environment. Uses C++.NET. Also implemented a complete on-line commercial-quality documentation HELP component. Project was completed as a primary emphasis of my 2008 sabbatical leave with the goal of coming up to date with current-generation .NET programming and development tools.