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EDUCATION ❖ PhD in Computer Engineering, University of South Carolina, 1989.
 ❖ BS and MS degrees in Electrical Engineering, USC, 1980 and 1981, respectively. □

WORK EXPERIENCE

1/2002-Present **University of South Carolina.** Associate Professor and Director, VLSI Design Laboratory. Davis has been an adjunct faculty member for a number of years, and recently joined to faculty as a full-time, tenure-track faculty member.

3/2001-12/01 **Chaudron, Davis & Associates, Columbia, SC.** Serving as partner in family-based consulting firm specializing in: business process re-engineering; workflow design; SAS-70 compliance plan development; engineering product strategy development; software methodology training and mentoring; software product requirements & specifications development; intellectual property acquisition, transfer and dispute mediation; technology licensing contract analysis; and, technology liability discovery for legal jurisprudence. Clients included IT services companies, ASP service providers, law firms and engineering systems houses in South Carolina, Oregon, California, Great Britain, Japan and Malaysia.

8/2000-3/2001 **Covansys, Inc., Farmington Hills, MI.** Held position of Vice President of Engineering for healthcare vertical business unit for \$500M IT consulting services company. This company is looking to provide IT strategy consulting, contract development and outsourcing services into healthcare provider, payer and life sciences segments of industry. Responsibilities included: □

- ◆ Creating product/solution offerings in the *HIPAA remediation* and *e-Health* product spaces within healthcare, currently overseeing specification and development of remediation tools for providers and payers to address HIPAA compliance. E-Health offerings include bringing a set of technology components to market to address the problems associated with identity management, secure messaging and secure access and delivery of confidential healthcare data between healthcare trading partners.

- ◆ Developing business plan for healthcare unit, including service offering definition, competitive analysis and financial analysis, and development of technology roadmap.

- ◆ Managing a team of IT consultants in e-Health arena, including these activities: generating RFP bids/proposals, providing liaison to technology delivery organizations within the corporation, and actively working on a number of IT project proposals in clinical case management and secure identity management for Healthcare and Public Sector market segments. Technology employed includes: Java/J2EE, Oracle 8i, Open LDAP and other custom technology created by the team to integrate and apply the technology to healthcare problems.

11/1996-7/2000 **HealthMagic, Inc., Columbia, SC.** Held positions of Senior Architect, Chief Scientist and Vice President of Engineering for healthcare-based “dot.com” company. This start-up has product offerings in the consumer “e-Health” web portal space and in the post-acute/home health clinical management space. Responsibilities and accomplishments included the following: □

- ◆ Carried out data analysis, architecture and design/implementation of the HealthCompass backend patient health record repository--designed to warehouse and provide authorized access to individual consumer summary financial and clinical health record data for over ten million health care consumers in the US over the Internet. Databases implemented in SQL Server and Oracle 8i DBMS engines, and successfully populated with over 10 million subscriber health records. Accompanying middleware and backend used by leading healthcare dot.com portals as backend health record and security middleware.
- ◆ Served as Principal Investigator and Project Scientist for creation of a Disease Management engine employing intelligent software agent-based architecture built on top of HealthCompass back-end repository. The application was created to assist consumers in personal health enhancement and treatment compliance monitoring for chronic diseases requiring remote clinical interventions and outcomes assessment, such as Diabetes. Work undertaken as a result of proposals for government funding through NIST and HCFA.
- ◆ Created product architecture for Java-based secure clinical messaging platform. The messaging engine and applications allowed healthcare trading partners to conduct inter-enterprise workflows, allowing for the following types of complex transactions to take place on the Internet: physician appointment request/fulfillment; prescription refill request/fulfillment; and, claims/EOB submission/request. Framework allowed user-customizable workflows to be quickly defined and extended.
- ◆ Created architecture and managed website design and development for *e-health* portal affinity applications. This allowed health record data to be organized around “affinity” episodes--such as pregnancy, disease episodes or other time interval-based, lifestyle community aggregators.
- ◆ Managed product development of clinical automation solutions to the post-acute care segment of healthcare market. Took over management of development program during a crisis situation and led the development teams through a series of tightly coordinated product releases coinciding with cycle of HFCA regulatory changes. Oversaw the creation of a viable clinical methodology to form the basis for automating complex clinical care management solutions. Architected clinical workflow engine supporting state-based, clinical document lifecycle management and work-in-process reporting. Implemented standard software development practices through the organization using Rational Unified Process (RUP) methods. Successfully deployed system through ASP service model to over 300 Home Health agencies nationwide (Medicare/Medicaid only), which has successfully processed over 1 million patient visits from Intake through Discharge and Billing.

1/1996-11/1996 The Computer Group/IKON Office Solutions, Columbia, SC. Served as mentor, consulting architect and interim project manager for IT services group within \$300M office products and services reseller. Company was involved in IT development projects in real estate, industrial process control, and financial services industries. Responsibilities and accomplishments included the following: □

- ◆ Defining product architecture for real estate MLS client-server system; training team members in object-oriented methods; and, analyzing, defining and instituting a standard product development process based on Microsoft and SEI methods. Architectural objectives were met, including: functionality, performance, flexibility/extensibility criteria, through adoption of object technology and use of UML OOA/D methods, adoption of business rule modeling methods, use of sound analytical techniques for performance estimation and tradeoff analysis, and adherence to sound project management practices.
- ◆ Key accomplishments: (1) created system architecture and fully extensible search engine design, enabling easy retargeting of application to new customers with different business rules; (2) refined company's internal development process, where considerable improvements in productivity were realized, and (3) carried out business analysis and planning of four contract development client-server projects taken on by the company, in Real Estate, Call Center management, and Production process control domains.

2/1991-1/1996 Knowledge Based Silicon Corporation, Columbia, SC. Held positions of Director of Engineering, Vice President, and President and Chief Operating Officer. Company was providing R&D consulting services to Japanese systems houses. Primary responsibility was to reposition the company as a software products supplier to the electronic CAD industry. Repositioning was based on core patents and intellectual property jointly owned by the company and Ricoh, Ltd. Of Japan. Responsibilities and accomplishments included the following:

- ◆ Oversaw consulting and development projects from contract through delivery to leading Japanese clients. Completed and delivered on Japanese-based IT development contract projects for a number of leading Japanese systems houses. Deliverables included proprietary product offerings in the areas of: (1) analog cell-based VLSI design, Spice-based simulation, and repository-based cell management and search engine tool set, (2) enterprise workflow object management environment, and (3) various VLSI chip and PCB designs for embedded systems applications.
- ◆ Managed company operations as COO for four of five-year tenure: Oversaw “churn” of services staff downsizing and subsequent re-growth of headcount in product development, QA, applications engineering and customer support. Defined products, made key product strategy and architecture decisions. Co-wrote business plan and implemented plan according to time and budget constraints.
- ◆ Key technology/management oversight roles: product requirements, functional specification, product architecture, designing company's core database engine technology, and training junior-level staff in various technical and professional methods and skills.
- ◆ Architected and oversaw the development of high-level graphical design capture, simulation analysis, and VLSI synthesis (VHDL/Verilog) design generation products created for electronic VLSI systems designers. These products were delivered to the market on Unix workstation (Sun, HP, IBM) and PC (Windows 3.1) platforms, and were adopted for VLSI application-specific integrated circuit (ASIC) design by leading systems houses worldwide. Products were built around well-researched methodology (for which company was awarded process patents), resulting in its use by clients in the creation of many large, million gate VLSI chip designs for telecommunications, multimedia and computer peripheral applications. □

- ◆ Key accomplishments: (1) instrumental in company turnaround by transforming business from contract services to commercial "shrink-wrap" software vendor, cutting expenses by 65% as a result of focusing the business activities, and raising company's value--based on technology portfolio, distribution channel and client list--such that it was attractive to additional outside investors as an acquisition target; (2) delivered two products to the Unix workstation-based Electronic CAD marketplace, positioned products as price-performance leaders resulting in sales of several hundred Unix seats worldwide; (3) created worldwide product distribution and marketing partner network; and, (4) developed company's technology position, increasing company's patent holdings, directly leading to an acquisition bid in Q4-95. □

7/1989-1/1991

Mitsubishi Electronics/Horizon Research, Inc., Waltham, MA. Held positions as Senior Scientist and Group Manager for technology start-up. This company was originally a sub-contractor to Mitsubishi in the area of computer systems development, who was acquired to form part of a research and development arm serving as a conduit for attracting American R&D talent to Japanese advanced hardware and software development projects. Responsibilities and accomplishments included the following: □

- ◆ Managed activities of joint American and Japanese research and development team, located in Boston and Kanagawa, Japan. This team was responsible for 5 simultaneous development projects, 3 of which were interdependent on one another (resources, deliverables, project time frames).
- ◆ Researched, designed and built rapid application development (RAD) environment for domain-specific factory scheduling application. Primary customer was a Japanese brewery.
- ◆ Created domain knowledge management applications for automated generation of factory scheduling applications, based on using a graphical drawing palette to construct a resource-based model of factory production process. This model could be read as input to compile and generate an instantiated scheduling system using a scheduling engine acquired from a leading US university.
- ◆ Carried out analysis of application architecture and performance estimates for distributed computing Unix workstation family being developed by Mitsubishi, employing both RISC technology running Unix and a hardware accelerator for specialized, compute-intensive intelligent applications in domains of currency trading and heavy machinery.
- ◆ Consulted on the creation of a domain-independent, pattern-based rule engine written in C++ for use in Mitsubishi-specific industrial applications, based on using public-domain technology. Engine was subsequently used as the base platform on which the scheduling system and scheduler RAD environment were ported.

8/1980-7/1989

NCR Corporation, Columbia, SC. Held positions of Software Design Engineer, Systems Architect, Project Leader and Program Manager. Designed and/or wrote systems and applications software, both for internal product development and internal/external customers. Architected application systems involving integration of different business logic, database and networking computing components. Built interdisciplinary team to support business motions in targeted Financial and CI/MEG market sectors. □

- ◆ Defined the UI application architecture and product strategy for "next generation" user interface products spanning NCR's character-mapped and bit-mapped terminal product lines. Analysis and recommendations adopted across corporation's Unix product line. Served as NCR's representative to X/Open on matters pertaining to Unix GUI issues.
- ◆ Integrated client manufacturing applications into an enterprise-wide, heterogeneous database environment, employing Oracle's DBMS and a proprietary interface engine in order to connect to older flat-file legacy databases. Information model and system

architecture was developed, system components were coded and tested for feasibility, and the technology was transferred to NCR's manufacturing group.

- ◆ Designed client-based "expert system" application for branch-level, consumer loan pre-qualification, as part of NCR's product motions to a leading financial institution. System based on modeling specific expertise of leading bank loan officers, creating business rule base subsequently encoded into client application.
- ◆ Devised and implemented software process, with project and process metrics, for application software development and 3rd-party software applications.
- ◆ Proposed, architected and managed development of an intelligent Help-desk CRM "expert system" application to assist non-technical Call Center operators in making better call-routing decisions at NCR's Customer Support central help desk facility. Limited deployment carried out worldwide.
- ◆ Co-defined DDP environment for large European banking consortium; network topology of 1500 nodes (Ethernet, X.25, SNA LU6.2), integrating teller, electronic journal, ATM and POS functions. Co-defined architecture, drafted design documents; responsible for Unix middle-tier functionality at branch-level for backoffice OA/DBMS processing, redundant SNA/WAN host gateway, CNMS & SWD, and console-less Unix administrator operation.
- ◆ Developed hardware, firmware and software for NCR Tower and 3300 TMX computer product lines. Performed development activities for Unix OS/kernel, peripheral drivers, and Ethernet LAN software projects. Also did development on monitor and subsystems for proprietary TMX transaction processing system on 3300 series financial servers.
- ◆ Developed LSI device characterization tests and performed design analysis tasks associated with hardware device selection according to design requirements and device specifications.

RELEVANT PUBLICATIONS

- ❖ Davis, J. P., and K. A. Armstrong, MD, "Increasing Treatment Adherence Using the Internet and Intelligent Software Agents", *Proceedings AMIA-98 Spring Conference*, Philadelphia, PA, American Medical Informatics Association, 1998. □
- ❖ Davis, J. P., J. L. Morrell and G. M. McFaddin, "Workflow-based Lifecycle Modeling: A Paradigm for the Analysis and Architecture Of Enterprise-wide e-Health Applications", *OOPSLA Workshop on Objects, Workflow and the Virtual Enterprise*. OOPSLA-99 Conference on Object-Oriented Programming, Systems, Languages and Applications – Denver, CO. Association of Computing Machinery, 1999.
- ❖ Davis, J. P., " , M. N. Huhns, and R. D. Bonnell, "Using Objects and Patterns for Building Compliance Agents in Healthcare", *Proceedings OOPSLA-98 Workshop on Healthcare*, Association for Computing Machinery, 1998.
- ❖ Davis, J. P., " , M. N. Huhns, and R. D. Bonnell, "A Method and Architecture for Building Compliance Agents", *Proceedings AAAI-98 Workshop on Intelligent Agents*, AAAI Press, 1998.
- ❖ Davis, J., Nagarkar, S., and J. Mathewes, "High-level Design of On-Chip Systems for Integrated Control and Data Path Applications", *Proceedings Design SuperCon 1996 On-chip System Design Conference*, Hewlett Packard Company & Integrated Systems Design Magazine, 1996.
- ❖ Davis, J. P., "High-level Design for Synthesis: The Next Step", *Proceedings Electronic Design Automation and Test 1995*, EDA&T Asia, Engineering Design Automation & Test, Seoul, South Korea, 1995.

AWARDS AND AFFILIATION

- ❖ Recipient of various industry awards, including *Technology in Print Award* and *R&D Developer Award* (three time winner, NCR Corporation). □
- ❖ Member of *Tau Beta Pi* and *Eta Kappa Nu* engineering honor societies.
- ❖ Member of IEEE, ACM AAAI, AMIA professional societies.