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### **Objective**

A position involved in developing software and/or systems for controlling mechanical devices. I am open to roles as either an individual contributor or a leader, and as either a contractor or regular employee. At this time I am limiting my search to Orange and San Diego Counties.

### **Skill Summary**

31 years of experience developing real time embedded system and software for mechanical systems, 20 years in leadership roles. Master's degree. Excellent written and oral communication skills. Team player. 10 years medical device experience with both 510(k) and PMA products. Extensive safety critical software experience. Extensive motion control & closed loop (PID) control experience including flight controls (conventional hydraulics and EHA), and electric motor control (DC brushless and AC induction). Outstanding analytical, laboratory, and problem solving skills. DO-178B (Level A), Mil-Std-498, process definition, proposal writing, 11 US patents awarded. "C", Assembly Language, DSP, ARM, SVN. Mastery with Windows and Microsoft Office (Word, Excel, Access, Power Point). Certified Scrum Master (trained by Mike Cohn).

### **Employment**

#### ***Tandem Diabetes Care, San Diego, CA***

#### **Senior Director of Software Engineering, November 2006-Present (full time since November 2007)**

Since joining Tandem, I have been responsible for all pump software at Tandem, including both our commercially available pumps (t:slim, t:flex) and our platforms for article pancreas research. *t:slim* and *t:flex* are user friendly, full color touchscreen based ambulatory insulin pumps (ARM Cortex and MSP430). I was personally involved with system, software and algorithm design for all of our pumps. I wrote the majority of the software documents for both our pumps and t:connect (website supporting t:slim and t:flex), including the SRS and the SDS for each project. I recruited and trained the software teams, and the team which performs the formal software validation. I also setup overseas outsourcing for our software verification activities. I run the department using Scrum. I was a major contributor to the t:slim Assurance Case Report and the primary author of the t:connect Assurance Case Report. The User Experience group also reports to me. I have had the privilege of being with Tandem as it grew from a handful of engineers to a publically traded medical device manufacturer (NASDAQ: TNDM).

#### ***Aubrey Group, Irvine, CA***

#### **Senior Software Engineer, July 2005-November 2007**

Designed and implemented embedded software for a class III implantable medical device. Designed and implemented software to control the selection, charging, and conditioning discharging of a network of Lithium Ion batteries. Designed and implemented software to control a device which administers a high voltage (30,000V) treatment. Designed and implemented software to control a device which mixes chemicals with blood. All of these projects used the Green Hills "C" tools for an ARM7 micro controller. In addition to designing and implementing the code, I wrote all of the process and design documents for these projects.

**Parker Aerospace, Controls System Division, Irvine, CA**  
**Senior Principal Engineer/Contractor, Feb 2004-July 2005**

Technical lead for a rescue effort of a DO-178B “Level A” flight control actuation system that was several years behind schedule. Trained and led a team of 40 contractors to finish development and formal verification of the software. Rewrote system requirements specification, software requirements specification, two interface description documents and a number of other smaller documents such as the DO-178B Accomplishments Summary.

**April 2003-Feb 2004**

System engineer for the Flight Control Actuation System (FCAS) on the F-35 Joint Strike Fighter. Wrote FCAS Network Interface Control Document. Designed a scripting language for a complex automated test console. Wrote Requirement Specifications for several pieces of test equipment. Developed dozens of verification procedures.

**Snap Appliance, Inc. (Formerly Broadband Storage Inc.), Irvine, CA**

**Technical Director/Principal Engineer.** January 2000 – April 2003.

When Delphi spun off Broadband Storage, I was asked to take a career detour by becoming the chief architect of the file system that they wanted to develop for their NAS/SAN product. In this role, I designed and implemented a full featured, fully distributed, file system from scratch. Object oriented design. I wrote all of our process documents. In addition to my technical responsibilities, I was responsible for both the file systems software team and our intern program.

**Delphi Engineering Group, Costa Mesa, CA. Principal Engineer.** Oct. 1996 – Jan. 2000.

- (1) Rudder Control System for the Raytheon Hawker Horizon Business Jet. Wrote controller software requirements, controller software design description, and implemented and integrated object oriented controller software. Also was a major contributor to the system documents (interface descriptions and system design descriptions). Wrote all of the DO-178B (Level A) process documents (PSAC, SCMP, SQAP, SDP, SVP).
- (2) Throttle Module Signal Conversion Unit for the Raytheon Hawker Horizon. Wrote all of the DO-178B (Level C) process documents for the software (PSAC, SCMP, SQAP, SDP, SVP) as well as for the hardware (DO-254 PHAC). Wrote software and hardware requirements and accomplishments summary (AS). Technical lead for the project.
- (3) Light Hybrid Torpedo (MK-46, Mod 8) Hardware Application Layer for the Sonar Processor. Developed and documented (full Mil-Std-498) multiple object oriented device drivers and a hardware application layer for SPOX real time operating system for an Array of 48 TMS320C40 Digital Signal Processors(DSP).
- (4) Developed FLASH loader and serial communication routines for TMS320C32 DSP based test equipment.
- (5) Acted as technical lead and customer interface on multiple small projects.
- (6) Completely wrote three proposals for various avionics and flight control systems, (two won). I also wrote most of Delphi’s process documents and I created a very successful intern program.

**Orange Coast College, Costa Mesa, CA, Adjunct Instructor.** January 1998 – June 2003. I taught “Assembly Language”(CS240) and “Computer Architecture”(CS116).

**Parker Hannifin Corporation, Irvine, CA, Principal Engineer.** February 1986 - October 1996.

At Parker I worked in two centralized engineering departments that provided engineering services to multiple divisions of Parker, hence I worked on a wide variety of projects including:

- (1) Electro-Hydrostatic Actuators (EHA).

I worked on four EHAs. All of these projects used real time embedded software which included closed loop control (PID), low level hardware interface (device drivers), redundancy management, cross channel data links, and Built In Test (BIT)

(2) Other Flight Software Projects

I designed and implemented the software for the Thrust Vector Controller software for stages 2 & 3 of the Pegasus rocket, a digital controller for a vapor cycle system for the Apache Longbow AH-64D and an R&D effort to create a controller for an advanced fuel injector system for a Gas Turbine Engine.

(3) Industrial Motion Control Projects

I designed and implemented the software for multiple industrial motion control projects including a digital hardware design for two digital programmable motion controllers "PMC100/EMC100 and "Mighty Dog", a refrigeration process controller "EVAC", an industrial defrost controller and an optical proximity sensor. I also designed the digital hardware (including EPLD design) for the EMC/PMC 100 and the optical proximity sensor.

(4) Motor Control Projects

I designed and implemented software for a digital 15HP AC Induction Motor Driver, and a digital DC Brush pump driver/controller "Zenith".

(5) I specified and designed the software for an Ambulatory Medication Infuser.

**Hughes Aircraft Company**, Newport Beach, CA, **Member Technical Staff**. July 1984-February 1986. Designed and implemented (1) a thermal analysis program for micro-circuits (2) a new generation of software for a large laser trimming system (3) several interfaces between the VAX and various automatic assembly and test machines.

**University of California, Irvine, School of Engineering**. Teaching assistant: lectured on FORTRAN and Basic, led laboratory and discussion sessions in control systems, experimental methods, heat transfer, and thermodynamics. Jan 1982-March 1984.

### Education

M.S. in Mechanical Engineering, December 1984

University of California, Irvine      G.P.A. = 3.76  
Emphasis in Thermal Sciences

B.S. in Engineering, June 1982

University of California, Irvine      G.P.A. = 3.60 (magna cum laude)

Ph.D. in Organizational Leadership in progress (expected completion 2018).

Regent University, Virginia Beach, VA

Plus multiple continuing education classes including classes in Scrum (Mike Cohn), Agile (Mike Cohn), , Software Engineering(USPDI), Avionics (Univ. of Kansas), Electric Motor Driver Design (Univ. of Wisconsin), Electro-mechanical Power Conversion (Univ. of Wisconsin), MIL-STD-2167A Software Development, Micro Electronic Machining Microsoft Access 2.0 (UCI Irvine), DSP Architectures (UC Irvine), and Battery Technologies (TI).

Chairman of the *Med-Dev San Diego* conference, 2013 & 2014. Keynote speaker at the *Software Design for Medical Devices* conference in 2013.