

# Curriculum Vitae

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## Education

### University of California, Irvine, California

- BS, Information and Computer Science

### Edinburgh University, Edinburgh, Scotland

- M.Sc., Computer Systems Engineering
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## Employment

### aicas, GmbH

*Karlsruhe, Baden-Württemberg, Germany*

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- Focusing on the use of Java in embedded, real-time systems, provided software architecture, design and implementation of numerous in-house projects to support customers and their sales teams. These projects included machine learning, FPGA chipset access, image recognition, motor control and IoT applications for Siemens, Xilinx, Fiat-Chrysler and others.
- Created several application notes to provide customers with detailed step-by-step directions on how to use various aspects of the product line and provided customer training on how to best utilize the company's products.
- Ported the aicas Java Virtual Machine to run in the PikeOS real time operating system (RTOS) while enhancing support for Embedded Linux, VxWorks and QNX RTOS products.

### The Boeing Company

*Long Beach, California*

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- Chief architect of the automated, web-based test analysis system for Boeing C-17 avionics software. System was implemented in Grails, Groovy and Java using a MySQL database.
- Adviser for the safety critical software aspects of the F-15E Strike Eagle - System 2 nuclear weapons system upgrade.
- Contributor to DO-178C/ED-12C *Software Considerations in Airborne Systems and*

*Equipment Certification*, the international standard for safety-critical systems operating in civil airspace.

- Key author of DO 332 *Object-oriented Technology and Related Techniques*, the object-oriented supplement to DO-178C.
- Contributor to three airworthiness security standards for the FAA and EASA:
  - DO-326A / ED-202A – *Airworthiness Security Process Specification*
  - DO-355 / ED-204 – *Information Security Guidance for Continuing Airworthiness*
  - DO-356 / ED-203 – *Airworthiness Security Methods and Considerations*
- Architect and lead implementer for the augmented reality radio simulator for the C-17 Integrated Radio Management System used to refine the design of the C-17 radio systems created for the United Arab Emirates Air Force and the Indian Air Force.
- Java language advisor for the Future Combat Systems (FCS) effort and responsible for the retention of approximately \$500 million of Java software for FCS.
- Principal architect and implementer of a software test analysis methodology in which avionics software formal testing is in itself analyzed for completeness of code coverage of the avionics software under test.
- Principal architect of the web-based tools used by developers of the avionics for the USAF C-17, including Java- and Groovy-based web servers for peer review, test result analysis, software change tracking and others.
- Provided training to senior software developers on exception handling as used in Ada, Java, Modula-3 and C++.
- Researched and created the first functional packages for new avionics software to adhere to the strict requirements of the Ravenscar profile for real-time safety critical software.
- Provided tools necessary to support CMMI level 3 and level 4 software process maturity certification.

## **California Applied Trading Science**

*Beverly Hills, California*

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- Produced all data and reports for clearing and regulatory compliance including real-time short rule checking and NASDAQ trades.
- Researched and implemented necessary steps to comply with formal and legal requirements for record keeping and transaction reporting for NASDAQ and the SEC.
- Created and maintained the company SQL database for trade transaction activity including Java network programming used to bring transaction data from New York and Chicago in near real-time.
- Created portions of the trade engine involved in the use of the FIX and ITCH financial network protocols.

## **Axiom Navigation**

*Costa Mesa, California*

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- Reorganized and refactored existing product line embedded software (C and C++) in order to support modular development and additional related products.

- Introduced software development methods and processes to establish quality, robustness and responsiveness to changing product definition and customer requirements, marketing priorities and business planning.
- Researched, designed and implemented a new product line consisting of a multi-tiered web application server running on Linux to support fleet management operations for customers. This new business opportunity provided existing customers, the majority of whom were not comfortable with software development, a ready-made application enabling them to keep track of their vehicle fleet in real time. This application involved the creation of Java applets, servlets and Java server pages, their communications with remote web services using XML-RPC and a local database using JDBC, and the installation and maintenance of a JBoss web server.

## **Sun Microsystems**

*Los Angeles, California*

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- As the lead engineer for Sun Microsystems in a joint project with Wind River Systems, provided management liaison between the two companies and supervised the architectural integration with and porting of the Java Media Framework to a Java-enabled prototype of a tablet-based computer running VxWorks developed for Intel.
- Provided the overall software architecture and detailed software design for a Java-based video conferencing system being built by Cisco Systems. This included simulation of the hardware, multi-threaded hardware control through JNI, embedded browser integration, graphical user interface component design, database access and maintenance and integration with the VxWorks executive.
- Ported major portions of the Personal Java virtual machine and its environment to several processors, including the PowerPC, Intel Pentium and StrongArm. This involved gaining detailed knowledge of the operating system kernel and the design and implementation of the SMI Personal Java virtual machine.
- Provided leadership for a joint Sun Microsystems / Nokia project developing a set-top box incorporating a modified version of the Mozilla browser with Sun's Personal Java as its JVM. Created and supervised acceptance testing of the JVM including browser security issues, RMI and applet interaction.

## **Interstate Electronics Corporation**

*Anaheim, California*

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- Managed the software systems for field trials of aircraft training range systems, including supervising and participating in their deployment in South Korea and Taiwan.
- Designed and implemented portions of the firmware of Global Positioning Satellite (GPS) receivers while providing the primary guidance as to how such designs could be efficiently implemented with the selected compiler and runtime system.
- Created a distributed trajectory simulator used to analyze and validate avionics software and GPS receiver tracking and position reporting.
- Designed and implemented critical portions, including RAIM compliance and message exchange and validation of a Differential GPS ground station used for precision landing guidance of commercial aircraft.

## **TLD Systems, LTD**

*Torrance, California*

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- Manager of Software Quality Assurance. Responsible for full validation of the company's principal product, the TLD Ada Compiler for the 1750A central processor which was heavily utilized in avionics, satellite and radiation hostile environments.
- Major contributor to the syntax and semantic analysis portions of the TLD Ada compiler.

## **Boulton & Watt Engineering**

*Costa Mesa, California*

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- Designed and implemented a tool set for geologists to perform aquifer analysis and well placement for site dewatering.
- Designed and implemented a compiler for a company specific computer programming language to enable the transition to a more commercially viable software development environment.

## **Christian Rovsing Corporation**

*Irvine, California and North Billerica, Massachusetts*

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- Using the C programming language, implemented multiple communications protocols including NATO Link-1 and X.25 for embedded military systems.
- Provided consultation and analysis of communications protocols and their potential security problems.

## **Johnson Controls, Incorporated**

*Santa Ana, California*

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- Major contributor to the software implementation of the automatic controls for the wastewater treatment plant in Hobbs, New Mexico.

## **Hughes Aircraft Company**

*Fullerton, California and Torrejón de Ardoz, Spain*

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- Programmer contributing to **Combat Grande**, the combat air control center for the Spanish Air Force, on site at Torrejón de Ardoz, Spain.
- Implementer of several software packages for mobile USAF air control centers.

## **United States Navy**

*San Diego and Long Beach California, Republic of Vietnam*

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- Programmer, USS Piedmont (AD 17).
  - Member of the Naval Advisory Group and Mobile Riverine Force, Republic of Vietnam.
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## Forensic Experience

### **Holland & Knight - Los Angeles, California (2005, defense)**

*California Superior Court, Los Angeles, CA - Judgment for plaintiff*

Case involved the misappropriation of a mailing list of registered acupuncturists. Primary contribution was to demonstrate how easily such a list could be obtained from publicly available websites.

- Prepared a 15,000 item mailing list of acupuncturists from web-available sources over three days.
  - Testified in court as to the techniques available to retrieve such information from public sources and how data multiple sources could be merged into a set of unique and uniform records.
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### **Lee & Oh - Los Angeles, California (2005 – 2007, plaintiff)**

*American Arbitration Association, Los Angeles, CA - Judgment for plaintiff*

Case involved the use of elliptic curve cryptography, Linux and Bluetooth in constrained devices such as hand held computers to communicate wirelessly with a secure server. Primary contribution was to show that the contract in question was not fulfilled due to logical inconsistencies in the defendant's required demonstration.

- Provided analysis showing that of a demonstration by defendant of constrained device communication could not have taken place as defendant stated due to temporal anomalies with the equipment and software.
  - Provided an equivalent demonstration where no cryptography whatsoever was used, thereby showing that defendant's reproduction of an earlier demonstration failed to meet minimal contractual requirements.
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### **Spiro Moss, LLP - Los Angeles, CA (2006-2007, plaintiff)**

*US District Court, Northern District of California, San Jose Division – Settlement for plaintiff*

Case involved defendant's violation of employment contract involving employee lunch breaks. Key contribution was to invalidate defendant's position that such lunch breaks could not be recorded in a timely and accurate manner by employees.

- Interviewed employees in the field to determine how the hand held data entry device used for product inventory was used on the job and how it might be programmatically enhanced to more readily meet their needs.
  - Researched the techniques needed to program the Norand device in order to determine whether it could be programmatically enhanced to record meal breaks.
  - Provided an opinion outlining three different techniques by which the Norand device could be programmed to record meal break information.
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### **Member Services, Inc, Troutman, North Carolina (2008-2011, plaintiff)**

*US District Court, Northern District of New York, Binghamton Division – Judgment for plaintiff*

Case involved the misappropriation of trade secrets and the improper copying of Java source code by defendant. Additionally, this case involved the evolution of defendant's Java-based web sites over time and the functionality provided at several strategic moments in time.

The \$26,000,000 verdict for plaintiff was the 75<sup>th</sup> largest verdict in the United States for 2011.

- Provided analysis of the migration of functionality from plaintiff's source code to defendant's source code, resulting in irrefutable examples of direct code copying
  - Recreated defendant's back office software and web applications at various times in the past in order to demonstrate they did not have the functionality described by defendant in sworn testimony.
  - Provided over six hours of testimony in Federal court as well as two depositions.
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### **Gibson, Robb & Lindh, LLP – San Francisco, CA (2009-2010, plaintiff)**

*California Superior Court, Los Angeles, CA – Judgment for defense*

Case involved the construction of Java-based web sites for plaintiff and the level of functionality of these web sites, their overall engineering sophistication and degree to which they met the contract's objectives.

This case was successfully appealed and is awaiting retrial.

- Recreated the websites in question from source code, synthesized example test data and provided an analysis of functionality.
  - Analyzed the Java source code for the websites in order to provide an opinion on the level of engineering sophistication used in them and potential problems with future software maintenance and enhancements.
  - Provided an opinion outlining several areas in which the plaintiff's delivered product failed to meet minimal contractual requirements.
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### **Sedgwick, LLP – Irvine, CA (2013-2014, defense)**

*California Superior Court, San Diego, CA – Settlement favorable to defense*

Case involved the interdependency between two software entities, one created for the US Government and one created internally for eventual sale to non-Governmental customers. Both software entities used the Java programming language, Java Server Pages and the Struts framework.

- Found in the Java source code of plaintiff crucial dependencies on the software entity created for the US Government, thereby refuting the claim of plaintiff that the two were independent.
  - Provided analysis and supporting evidence to attorneys on multiple methods to impeach the 30(b)(6) witness provided by plaintiff.
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### **Dongell, Lawrence, Finney LLP – Los Angeles, CA (2014, defense)**

*JAMS Arbitration, San Francisco, CA – Settlement (impact unknown)*

Case involved the airworthiness certification of client's product as it was used in aircraft operating in civil airspace. In particular, the degree to which formal testing reflected the requirements provided by client and their suitability to the constraints imposed by DO-178B on plaintiff's testing methodology, and the degree to which an applicant has latitude in achieving airworthiness assessment.

- Provided an analysis of the impact of fixed-price contracts in the domain of airworthiness testing, the differences between skill sets of programmers and testers, and the failure of project management by plaintiff.
  - Provided a basis for refuting plaintiff's assertions that client failed to follow proper steps to achieve airworthiness certification.
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### **Conroy, Simberg, Ganon, Krevans, Abel, Lurvey, Morrow & Schefer, P.A. – Hollywood, FL (2014, defense)**

*US District Court, Middle District of Florida, Orlando FL – Settlement (impact unknown)*

Case involved direct and indirect copyright infringement of Javascript code available through multiple websites and the responsibility of the client to control the distribution of copyrighted material about which the client was completely unaware.

- Through a detailed explanation of the method by which websites distribute code via the Hyper Text Transfer Protocol (HTTP), successfully refuted opposing expert's opinion that the client caused the distribution of copyrighted material.
  - Provided a basis for successfully refuting plaintiff's assertions that client had control over the distribution of copyrighted material.
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### **Ruben & Sjolander LLP – Woodland Hills, CA (2017, defense)**

*Superior Court of California, Santa Ana, CA – Settlement (results favorable to defendant)*

Case involved accusation by plaintiff that web support and hosting services provided by defendant were less than those outlined in contract.

- Provided initial analysis of the web artifacts remaining on computers used by plaintiff but still in possession of defendant.
  - Successfully archived the bulk of plaintiff's software and web artifacts in order to provide a basis for subsequent analysis.
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## **Casey Gerry Schenk Francavilla Blatt & Penfield LLC – San Diego, CA (2016 - 2017, plaintiff)**

*Superior Court of California, San Diego, CA – Settlement (results unknown)*

Case involved the determination of airworthiness of a private aircraft which had instrumentation installed, furnished by defendant.

- Provided analysis of defendant's source code with concerns about how well it conformed to the requirements of DO-178B.
- Advised attorneys on how the overall process of airworthiness determination is done for aircraft operating in civil airspace and how requirements and requirements traceability could be used by plaintiff to show inadequacies in defendant's product.

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## **Gauntlett & Associates – Irvine, CA (2018, defense)**

*US District Court, Northern District of California, San Francisco, CA – Settlement and dismissal of case favorable to defendant.*

Opposing expert created a rationale for why plaintiff could not have modified a key computer artifact supporting his view of trademark infringement. As defense expert, I was able to demonstrate that opposing expert's opinion had no basis in reality, leading to dismissal of the case.

- Provided background information to attorneys as to European privacy laws and their applicability to this case.
- Was able to turn plaintiff's refusal to furnish file artifacts into a winning strategy where an equivalent artifact was created and shown to be easily manipulable, in direct contradiction of opposing expert's testimony.



# Instruction

## **Orange Coast College, Costa Mesa, California**

- Taught courses in programming in Fortran, BASIC, Pascal and C.
- Created and implemented the computer typography for the student newspaper, *Coast Report*.

## **Rancho Santiago College, Santa Ana, California**

- Taught courses in programming in C.
- Created and taught the course *Object-oriented Programming in C++*.

## **University of California, Irvine, California**

- Created and taught the University Extension course *Unix Systems Administration*.
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# Publications and Presentations

## ***DO-332/ED-217: Using Modern Software Practice in Airborne Systems***

- Published in *Crosstalk – The Journal of Defense Software Engineering* March/April 2017

## ***The C-17 Communications System Core***

- Presented at the 21st Boeing Technical Excellence Conference (BTEC-21) St. Charles, Missouri, May 21, 2014

## ***Streaming Ciphers***

- Presented at the Unix Users Association of Southern California, Huntington Beach, California, October 14, 2013

## ***Heterogeneous Parallel Programming***

- Presented at the Unix Users Association of Southern California, Irvine, California, March 11, 2013

## ***RTCA / EUROCAE DO-326A / ED-202A – Airworthiness Security Process Specification***

- Published, August 2014

## ***RTCA / EUROCAE DO-355 / ED-204 – Information Security Guidance for Continuing Airworthiness***

- Published, June 2014

## ***RTCA / EUROCAE DO-356 / ED-203 – Airworthiness Security Methods and Considerations***

- Published, September 2014

## ***RTCA / EUROCAE DO-178C / ED-12C – Software Considerations in Airborne Systems and Equipment Certification***

- Accepted for publication, November 2011
- Advisory Circular (AC) provided by FAA July, 2013
- Author and member of SC-205/WG-71, 2007 – 2011.

## ***RTCA / EUROCAE DO-332 / ED-217 – Object-oriented Technology and Related Techniques Supplement to DO-178C/ED-12C***

- Accepted for publication, November 2011
- Advisory Circular (AC) provided by FAA July, 2013
- Author and member of Subgroup 5 of SC-205/WG-71, 2007 – 2011. RTCA DO-332 – Object-oriented Technology and Related Techniques (Supplement to DO-178C)
- Accepted for publication, November 2011
- Advisory Circular (AC) provided by FAA July, 2013
- Author and member of Subgroup 5 of SC-205/WG-71, 2007 – 2011.

## ***Object-oriented Software Considerations in Airborne Systems and Equipment Certification***

- Presented at IEEE Software Technology Conference, Salt Lake City, Utah, May 18, 2011.

## ***Airworthiness Aspects of Software in Civil Airspace***

- Presented at the Los Angeles SPIN, Redondo Beach California, December 3, 2011.

## ***Object-oriented Software Considerations in Airborne Systems and Equipment Certification***

- Presented at SPLASH-10, Sparks, Nevada, October 20, 2010.

## ***Divide and Conquer – OS Partitioning for Embedded Systems***

- Presented at the Boeing Technical Excellence Conference (BTEC13), Long Beach, California, July 25, 2007.

## ***Computer-aided Disaster. What Went Wrong? Going Beyond Requirements-based Testing***

- Presented at the Boeing Technical Excellence Conference (BTEC13), Long Beach, California, July 25, 2007.

### ***The Real Time Specification for Java***

- Tutorial presented at *The Boeing Software Conference (BSC2)*, Long Beach, California, March 6, 2007.

### ***Perl, the Cockroach of Computer Languages***

- Invited speaker at *The Coast Open Source Software Technology Symposium*, Newport Beach, California, October, 2003.

### ***Writing "Real Java", Not Just "C In Java"***

- Presented at *The Embedded Systems Conference*, San Francisco, California, April 2001.
- Published in *The Proceedings of the Embedded Systems Conference*, San Francisco, California, 2001.

### ***Using JNI - It's Not That Hard!***

- Presented at *The Embedded Systems Conference*, San Francisco, California, April 2001 and 2002.
- Presented at *The JDJ Edge Conference*, New York, New York, September 2001.
- Published in *The Proceedings of the Embedded Systems Conference*, San Francisco, California, 2001 and 2002.
- Adapted for and republished in [Comms Design](#) 2002.

### ***Implementing OO Design Concepts With Literate Programming***

- Presented at TOOLS Europe '96, Paris, France, February 1996.
- Published in *TOOLS 19*, Prentice-Hall, Inc., USA. 1996.

### ***LOCA – A Language for the Design of Large Scale Integrated Circuits***

- Master's Thesis – Edinburgh University, Edinburgh, Scotland
  - Published by the Department of Computer Science, Edinburgh University, Oct. 1980
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## Affiliations

### Unix Users Association of Southern California

- Program Chair, 1990 – 1997.

### EUROCAE / RTCA – Working Group 71 / Special Committee 205

- Member of the Committee convened to produce the DO 178C revision of the international technical standard *Software Considerations in Airborne Systems and Equipment Certification*.

### EUROCAE / RTCA – Working Group 72 / Special Committee 216

- Member of the Committee convened to produce three international airworthiness security standards:
  - DO-326A/ED-202A - *Airworthiness Security Process Specification*
  - DO-355/ED-204 - *Information Security Guidance for Continuing Airworthiness*
  - DO-356/ED-203 - *Airworthiness Security Methods and Considerations*

### Southern California Software Process Improvement Network (SPIN)

- Member of the Steering Committee, 2005 – 2011.
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## Other

### Licenses

- FAA Airman's Certificate
  - Private Pilot – Airplane Single Engine Land
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