

# RESUME - Dr. William A. Barrett

(408) 267-4382 *home*, (408) 960 5839 *cell*

[billbarrett04@gmail.com](mailto:billbarrett04@gmail.com)

<http://www.wbarrett.online>

2797 Lena Drive, San Jose, CA 95124

## Summary

PhD, physics and mathematics, University of Utah. Mix of academic and industrial professional work in physics, electrical and computing engineering. Associate professor, EE, Lehigh University. Lecturer, computer engineering, San Jose State. Published textbook on compiler construction, three printings. Numerous technical papers. Six patents. Software project management. Special skills in biometrics, pattern recognition, computer language parsing, Unix/Linux system administration, Windows, Xwindows, C++, java, Perl, Tk, SQL, Android java apps, several assembly languages.

## Background Summary

Retired 6/2012.

Lecturer, Computer Engineering, San Jose State, 1/1996-6/2012.

Project development, Applied Scanning Technology, 3/1994-1/1996

Software group project leader, Lasa Industries, 8/1986-9/1993

Proprietor and CEO, Qcad Systems, 3/1984-8/1986

Software group project leader, Hewlett-Packard Co., Cupertino, CA, 9/1974 to 3/1984

Associate professor, Electrical Engineering Dept, Lehigh University, 9/1968 to 9/1974

Assistant professor, Physics dept. Muhlenberg College, 9/1965 to 9/1968

Member, Technical Staff, Bell Laboratories, 9/1958 to 9/1965

## Education

PhD, physics and mathematics, University of Utah

MS and BS (with distinction), physics and mathematics, University of Nebraska

## Technical Employment Highlights

**San Jose State University**, San Jose, 1/1996-2012. Lecturer II, Computer Engineering Department, with full teaching load most semesters. Research with the *National Biometrics Test Center*, prof. Jim Wayman, director. General Engineering department interim director, one year. Graduate Studies & Research committee member. Student Affairs Committee member. Systems administrator for Unix systems laboratory (AIX, HPUX, Sun Solaris, Linux). Wrote *Advisor* web-based software system to assist undergraduate student advising. Wrote *Grader* software system to carry and report student course grades. Wrote an online book and companion software tools for CmpE 152. Course coordinator for CmpE 102 and CmpE 152. Created new graduate course GenIE 259 *Software cost estimation*.

*Courses Taught at San Jose State:*

CmpE 46 - Introduction to C/C++ programming

CmpE 50 - Advanced C++ object-oriented programming and Windows interfaces

CmpE 102 - Assembly language for the 80x86

CmpE 126 - C/C++ data structures and advanced programming

CmpE 130 - Data structures in secondary storage, B-trees, file management, disk management

CmpE 152 - Compiler construction

CmpE 163 - Computer graphics

CmpE 195A/B - Supervisor, several dozen undergraduate projects  
GenE 220 - Software engineering  
CmpE 223 - Advanced compiler construction  
CmpE 225 - Operating systems concepts  
CmpE 241 - Embedded processor software development  
GenE 259 - Software cost estimation  
GenE 295A/B - Supervisor, many graduate projects

**U.S. Forest Service**, 2004-2006. Private contract to develop biometric tool for the biometric matching of cut tree face images with their stump images. Delivered a finished Windows version and an Xwindows/Motif version: **logface**.

**Applied Scanning Technology**, Sunnyvale, 3/1994-1/1996. Engineering software staff member. Successfully developed and installed several versions at customer sites. Developed advanced intertask communication software tools, improved calibration system, many improvements to software and interfaces. AST sold an advanced system that measured cleaned logs in a lumber mill environment, advising the sawyer on the most profitable cuts to convert each log into standard lumber.

**Lasa Industries, Inc.**, San Jose, 8/1986-9/1993. Software manager, up to eight engineers. Responsible for all software and system development, including control, user interface and maintenance systems. Generated all user documentation. Principal system designer and key founding member. Three patents issued.

Lasa developed a fast turnaround direct writing machine for placing a tungsten wiring grind directly onto a gate array chip, from a software design specification. The system was very nearly successful, except for certain process problems. The development of more rapid turnaround chip fabrication and smaller line sizes eventually rendered the Lasa process obsolete, causing the company to fail. Our software team delivered everything required by the optical, mechanical, electronic and process engineers in a timely fashion.

- Architect of software and electronics portions of a sophisticated integrated semiconductor processing system, including tasks, inter-task message protocols, and electronics/optical/mechanical interface.
- Established unique concepts and code for submicron laser control and patterning.
- Designed and implemented software for interferometer-based table positioning, with temperature and air pressure compensation.
- Designed and wrote Xwindows widgets and operator interface.
- Characterized acousto-optic modulators, developed an anticipatory feed-forward real-time sub-micron calibration system for AOM positioning, leading to new plateaus of precision, stability and performance, and a patent.
- Developed pattern-recognition algorithms for locating and positioning chips accurately.
- Designed a robotic control language, wrote first control system.
- Developed first version of integrated circuit design conversion software. Drove the development of IC patterning optimizers.
- Assisted CEO in patent applications, product evaluation and marketing materials.

**Qcad Systems, Inc.**, San Jose, 3/1984 to 8/1986. CEO and principal founder. Three software products developed and sold; installed base of more than 400 customers supported. Won and fulfilled two software contracts.

**Hewlett-Packard Co.**, Cupertino, CA, 9/1974 to 3/1984. Project manager of a CAD tools advanced research group. Developed a Lisp-based silicon compiler system used for smart PLA (programmed

logic array) generation. Project manager of two compiler projects, Pascal and SPL, for the HP300 workstation.

### **Professional Affiliations and Awards**

Special Dedication award from student Society of Computer Engineers, SJSU, 2004

Lifetime member IEEE.

Awarded to Hall of Honor, Grand Island Senior High School, 1954

Best presentation award, Stanford University.

Best paper award, ICCCS.

### **Technical Papers**

See the web page <http://www.wbarrett.online> for reprints and downloads of some of these.

*Biometrics of Cut Tree Faces*, T. Sobh (ed.) *Advances in Computer and Information Sciences and Engineering*, 562-565, Springer Science+Business Media B.V. 2008.

*Compiler Design*, Course notes for CmpE 152, AS Print shop SJSU, 500 pages, begun Fall 1998, revised each semester since then, through 2005.

*Some Observations on the Cumulative Binary Probability Distribution*, National Biometric Test Center Collected Works, SJSU, August 2000.

*A Survey of Face Recognition Algorithms and Testing Results*, National Biometric Test Center Collected Works, SJSU, August 2000.

*A Pupil Finder*, Biometrics Test Center, SJSU, June 2000

*Image Classifier*, Biometrics Test Center, SJSU, May 1999

*IriScan Evaluation*, Biometrics Test Center, SJSU, March 1999

*Faceit and Miros Systems Observations*, Biometrics Test Center, SJSU, December 1998

*ROC Testing of Face Recognition Systems*, Biometrics Test Center, SJSU, June 1998

*Qparser User Manual*, published by QCAD Systems. Revised twice. This accompanied my Qparser translator writing system product, 1985/1987.

*Build a Pascal Subset Compiler*, in *Turbo Pascal, Advanced Applications*, Rockland Publishing, 1986.

*Compiler Construction: Theory and Practice*, principal author, March 1979 first edition, SRA Publishers, MacMillan later editions.

### **Oral Presentations**

*A Survey of Face Recognition Algorithms and Testing Results*, Asilomar conference on Signal and Systems, 1997.

*Fast Prototyping Device for Semiconductor Manufacturing*, Stanford University, 1989. This paper won a Distinguished Speaker award.

*The Impact of LSI on Minicomputers and Calculators*, at NEREM, Boston, Nov. 1972.

*Magnetic Memories*, at Conference on Pulse-height Analyzers, U. S. Naval Postgraduate School, March 1963.

### **Patents**

US 5,338,924, Focusing system, 1995

US 5,315,111, Fringe Focusing, 1994

US 4,978,841, Automatic Leveling System, 1990

US. 3,191,168, Thin Film Analog-to-Digital Encoder, 1965

US 3,187,324, Magnetic Analog-to-Digital Encoder, 1965.

US 3,067,408, A Non-destructive Electrically Changeable Memory Device, 1962.

## Other Interests

Android app development using java, Google tools, Eclipse, relational database, ongoing. Several small applications. The most sophisticated is *LearnLines*, a tool for actors and directors to learn their lines, manage and share spoken lines and play revisions.

Member, *Portraits of the Past*, a theatrical group associated with *History Museums of San Jose*.

Member, *Santa Clara County Democratic Club*. Treasurer 2016 - present. Gave talk on immigration reform, May 2012. Elected member of the executive board since January 2014. Developed a club membership and financial application tools, using Perl Tk, mysql. Tool designed to manage memberships, reports, money flow, bank reconciliation, FEC and FPPC reports and more intended for small social and political clubs.

Member, *Move To Amend*, San Jose chapter. Wrote and performed in a half-hour play related to Move to amend, 2012. Wrote several summaries of Supreme Court decisions related to corporate personhood.

Photography. Several of my color photographs were selected for display in the engineering building lobby for several years.

Produced several family-related videos with CyberLink video software, distributed free to family members through Google drive, DVD, USB drive.

Developed a browser-based illustrated story system, with several thousand annotated historic family photographs, stories and videos, also distributed to family members gratis.

Member, San Jose State Chorale, baritone section, five years. Performed with the San Jose Symphony and San Jose Ballet with the Chorale.

French horn player with Nova Vista symphony, ten years. First president of newly founded symphony board.