James H. Cross II
Professor Emeritus
Computer Science and Software Engineering

(Revised: August 11, 2021)

CONTACT INFORMATION

Computer Science and Software Engineering
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UNDERGRADUATE AND GRADUATE EDUCATION

B.S., Mathematics, University of Houston, 1971
M.S., Mathematics, Sam Houston State University, 1976
Ph.D., Computer Science, Texas A&M University, 1986

TEACHING AND RESEARCH INTERESTS

Software Engineering: software visualization and development environments, object-oriented analysis and design methodology, testing, reverse engineering, and metrics.

EXPERIENCE

Professor Emeritus (Jul. 2021 to present)
Professor (Sep. 97 to Jun. 2021)
Philpott-Westpoint Stevens Distinguished Professor (Apr. 2003 to Aug. 2006)
Department Chair (Jul. 96 to Aug. 2006, two terms)
Associate Professor with tenure (Sep. 91 to Aug. 97)
Graduate Faculty Member (Jun. 90 to present)
Assistant Professor (Sep. 86 to Aug. 91)
Department of Computer Science and Software Engineering, Auburn University

- Managing and directing the CSE Department (as chair Jul. 1996 to Aug. 2006)
- Conducting research in software visualization and analysis of software systems, reverse engineering, testing, and metrics.
- Teaching undergraduate and graduate courses in computer science and software engineering.
- Advising graduate students.

Research Associate and Lecturer of Computer Science (Jun. 85 to Aug. 86)
Laboratory for Software Research, Dept. of Computer Science, Texas A&M University

- Conducted research in visual imaging and analysis of software systems; supported by grant from the Software Technology Center of Lockheed Missiles and Space Division, Austin, TX.
- Taught undergraduate courses in the Computer Science Department.

Chief, Computer Services (Nov. 81 to May 84; On leave Jun. 84 to May 85 to Texas A&M University)
Department of Defense Dependents Schools, Atlantic Region (London, England)

- Selected and directed installation of hardware and software systems for the Regional Office, District Offices, and 42 schools in seven countries.
- Supervised MIS Regional Office staff, which developed MIS software and provided regional computer services.

Regional Computer Coordinator (Nov. 79 to Oct. 81)
Department of Defense Dependents Schools, Pacific Region (Okinawa, Japan)

- Coordinated computer educational programs and administrative services for District Offices and 38 schools in four countries.
- Designed and implemented a comprehensive School Information Management System.
- Conducted teacher training workshops in computer literacy.

Computer Specialist (Nov. 77 to Oct. 79)
Department of Defense Dependents Schools, Pacific Region (Okinawa, Japan)

- Planned and coordinated the development of an educational and administrative computer center from inception to operational status.
- Staffed and directed computer services for the District Office and 11 schools.

Computer Science Teacher (Aug. 76 to Oct. 77)
Kubasaki HS, Department of Defense Dependents Schools, Pacific Region (Okinawa, Japan)

- Designed, developed and taught computer science curricula for secondary schools.

Technical Training Instructor (Aug. 73 to Jul. 76)
Houston Technical Institute (Houston, Texas)

- Developed and taught introductory computer courses.

Computer Operator/Programmer (Feb. 69 to Aug. 73)
Texaco, Inc. (Bellaire, Texas)

- Operated / programmed CDC3300/3500 mainframes in a scientific programming environment.

SIGNIFICANT HONORS AND AWARDS

1) ACM Distinguished Member - for outstanding educational contributions to computing, 2017.
2) William F. Walker Teaching Award for Excellence Merit, Samuel Ginn College of Engineering, Auburn University, 2015.
3) Certificate of Appreciation, Bagley College of Engineering, Mississippi State University, 2010.
4) IEEE Computer Society, Certificate of Appreciation for Outstanding Contributions to COMPSAC 2009.
5) Texas A&M Distinguished Former Student for Computer Science, 2008.
6) ACM Recognition of Service Award, 2008.
7) Troy University Montgomery Distinguished Lecturer, 2008.
8) Philpott-Westpoint Stevens Distinguished Professorship, 2003-2006.
9) IEEE Computer Society, Meritorious Service Award, 2001.
10) IEEE Third Millennium Medal, 2000.
11) Senior Faculty Research Award, College of Engineering, Auburn University, 1999.
12) IEEE Computer Society, Vice President for Educational Activities, 1999.
13) IEEE Computer Society, Golden Core Member Award for distinguished service, 1998.
14) IEEE Computer Society, Certificate of Appreciation for Contributions to the 1998 Press Activities Board.
15) IEEE Computer Society, elected to Board of Governors, 1998-2000.
16) Senior Member, IEEE Computer Society, appointed August 1996.
17) IEEE Computer Society, Certificate of Appreciation for Contributions to the Field as Founding Chair of the Computer Society's TCSE Subcommittee on Reverse Engineering, September 16, 1992.
18) IEEE Computer Society, Certificate of Appreciation for Dedicated Service as Secretary of Publications Board, November 15, 1990.
19) Association for Computing Machinery Service Award, April 1988.
20) Member, Upsilon Pi Epsilon, December 1986.
21) Department of Defense Dependents Schools, Certificate of Appreciation Award, June 11, 1982.
22) Department of Defense Dependents Schools, Certificate of Appreciation for Contributions Award, October 30, 1981.

23) Office Education Association of Texas Certificate of Meritorious Service, April 2, 1976.

SCHOLARLY CONTRIBUTIONS

A. TEACHING

1. COURSES TAUGHT (most recent years)

Term	Courses Taught (with hrs)	Enrollment	If team taught, your portion of load (%)
Spring 2021	COMP 1213(3) online CPSC 1213(3) online CPSC 1223(3) online	253 55 43	
Fall 2020	COMP 1210 (3) x 12 sections CPSC 1213(3) online CPSC 1223(3) online CPSC 1223(3) online	238 46 33 39	
Summer 2020	COMP 1213(3) online COMP 7986 CPSC 1213(3) online	44 1 48	
Spring 2020	COMP 1210 (3) x 12 sections COMP 7990 CPSC 1213(3) online CPSC 1223(3) online	265 1 60 55	
Fall 2019	COMP 1210 (3) x 12 sections COMP 8990 CPSC 1213(3) online CPSC 1223(3) online CPSC 1223(3) online	293 1 48 31 42	
Summer 2019	CPSC 1213(3) online COMP 8990	40 1	
Spring 2019	COMP 1210 (3) x 12 sections COMP 8990 CPSC 1213(3) online CPSC 1223(3) online	238 1 46 40	
Fall 2018	COMP 1210 (3) x 12 sections COMP 8990 CPSC 1213(3) online CPSC 1223(3) online CPSC 1223(3) online	335 1 67 38 49	
Summer 2018	CPSC 1213(3) online COMP 8990	62 1	
Spring 2018	COMP 1210 (3) x 12 sections COMP 7970(3) COMP 7980 COMP 8990 CPSC 1213(3) online CPSC 1223(3) online	248 1 2 1 27 22	
Fall 2017	COMP 1210 (3) x 12 sections COMP 7980 COMP 8990	312 1 1	
Spring 2017	COMP 1210 (3) x 9 sections COMP 5710, 6710, 6716 (3)	218 63	
Fall 2016	COMP 1210 (3) x 9 sections	214	
Summer 2016	COMP 7986	1	
Spring 2016	COMP 5710, 6710, 6716 (3) COMP 1210 (3) x 9 sections	56 228	

Term	Courses Taught (with hrs)	Enrollment	If team taught, your portion of load (%)
Fall 2015	COMP 1210 (3) x 8 sections	204	
Summer 2015			
Spring 2015	COMP 1210 (3) x 7 sections	178	
Fall 2014	COMP 1210 (3) x 7 sections COMP 4710	170 33	
Summer 2014	COMP 8990	1	
Spring 2014	COMP 1210 (3) x 7 sections COMP 5710, 6710, 6716 (3) COMP 8990	149 48, 5, 4 1	
Fall 2013	COMP 1210 (3) x 7 sections COMP 8990	166 1	
Summer 2013			
Spring 2013	COMP 1210 (3) x 7 sections COMP 8990	157 1	
Fall 2012	COMP 1210 (3) x 7 sections COMP 4710 COMP 8990	158 24 1	
Summer 2012			
Spring 2012	COMP 5710, 6710, 6716 (3) COMP 1210 (3) x 6 sections COMP 8990	23, 6, 10 142 1	
Fall 2011	COMP 1210 (3) x 6 sections COMP 8990	140 1	
Summer 2011			
Spring 2011	COMP 1210 (3) x 6 sections COMP 4710 COMP 8990	137 17 1	
Fall 2010	COMP 1210 (3) x 6 sections COMP 4710 COMP 8990	146 13 1	
Summer 2010			
Spring 2010	COMP 5710, 6710, 6716 (3) COMP 1210 (3) x 6 sections COMP 8990	19 , 10, 2 128 1	
Fall 2009	COMP 1210 (3) x 6 sections COMP 8990	112 1	
Summer 2009			
Spring 2009	COMP 1210 (3) x 5 sections COMP 1217 (3) COMP 8990	102 10 1	
Fall 2008	COMP 1210 (3) x 6 sections COMP 8990	109 1	
Summer 2008			
Spring 2008	COMP 1210 (3) x 5 sections COMP 8990	106 1	
Fall 2007	COMP 1210 (3) x 6 sections COMP 1217 (3) COMP 8990	136 5 1	
Summer 2007			

2. GRADUATE STUDENTS – GRADUATED

Served as Major Professor

Barowski, Larry A. (PhD, 8/14), Auburn University (Research Associate)
Barowski, Larry A. (MCSE, 6/96), Auburn University (Research Associate)
Cheng, Xiaofeng (MCSE, 12/96), Symbiosys Inc
Dannelly, Steve, (PhD, 12/95), Winthrop University
Dannelly, Steve (MS, 3/90), Winthrop University
Davis, Richard (MS, 12/90), U.S. Army
Hendrix, Dean (PhD, 8/96), Auburn University
Henry, Laura (MS, 8/90), Auburn University
Huff, Steven H. (MCSE, 12/95), Lockheed Martin
Hutchinson, Donald (MSWE, 5/14)
Jain, Jhilmil, (PhD, 5/07), Google
Joyner, Julie (MSwE, 12/16)
Mathias, Karl (PhD, 12/99), U.S. Marshals Service (CIO)
May, Charles H. (MS, 8/92), Nichols Research
McNeil, Martin (MCSE, 12/95), Lockheed Martin
McQuaid, Patricia A. (PhD, 8/96; Co-Chair with Chang), Cal Poly at San Luis Obispo
Morrison, Kelly I., (PhD, 12/02), Performance Matters
Plunkett, Timothy (MS, 3/92), GTE
Rajarikan, Neelima (MSwE, 5/18)
Rao, Yunfan (MSwE, 5/19)
Randles, Brian (MCSE, 6/95), Harris Corp
Rekapalli, Narayana S. (MCSE, 6/96), Federal Filing Systems
Sadler, Mark (MCSE, 6/95), CACI (Gunter AFB) Sultana,
Nawrin (PhD, 12/19, Cross, Skjellum)
Tola, Darren (MS, 6/92), Columbus College, U.S. Army Reserve
Waddel, Katherine C. (MS, 12/89), IBM Corp

Served as Committee Member

Anderson, Robert (MS, 8/2018, Umphress)
Alabdulrazzaq, Haneen (MSwE, 5/2017, Umphress)
Alavioon, Seyedeh Sara (MS, 12/92, Chang)
Anupindi, Sankari Swaroop (PhD, 12/14, Baskiyar)
Barowski, Yawen (PhD, 5/10, Biaz)
Bradley, Nia (MSwE, 8/12, Narayanan)
Blocker, Susan (MS, 6/96, Moore)
Brown, Robert Jr. (MCSE, 12/95, Chang)
Burton_Megan (PhD, 12/18, Umphress)
Cao, Ting (MS, 12/17, Liu)
Chada, Saicharan Reddy (MSwE, 5/16, Yilmaz)
Chakladar, Sritika (MS, 8/16, Yilmaz)
Chang, Yifang (MS, 3/97, Chang)
Chapalamadugu, Sree Vishal (MSwE, 8/12, Seals)
Chatha, Karan (MS, 12/95, Carlisle)
Chen, Chun-Yu (MS, 12/96, Chang)
Chen, Chun-Yu (PhD, 12/99, Chang)
Chen, Qinmei (MCSE, 12/95, Carlisle)
Chintapalli, Sanket Reddy (MSwE, 12/14, Qin)
Chiu,-Yu (PhD, 12/92, Park), Outside Reader
Chou, Norman (MCSE, 3/96, Carlisle)
Clark, William (MSwE. 12/12, Umphress)
Collins, Susan L. (MCSE, 8/96, Chang)
Dennis, Brad (PhD, 8/14, Umphress)
Denton, Ben (PhD, 12/14, Umphress)
Dollar, Timothy (PhD, 6/96, Chang/Murphy)
Deason, William (MS 12/88, Brown)
Deshpande, Abhijeet (MCSE, 8/94, Gong)
Devarapalli, Kodanda (MCSE, 8/94, Murphy)

Edhala, Mammatha (MS, 3/88, Chang)
Fan, Kaiqi (MSwE, Lim)
Fulton, Scott (MSwE, 5/16, Umphress)
Gipson, John (MSwE, 8/12, Umphress)
Gondi, Rajitha (MSwE, 8/12, Seals)
Gondi, Ravali (MS, 5/11, Hendrix)
Gong, Zhitao (MS. 2016, Ku)
Grand, William (MSwE, 5/14, Chapman)
Hammond, Susan (Ph.D., 8/19, Umphress)
Han, Hyungoo (PhD, 12/90, Chang)
Hejmady, Prateek (MS, 12/11, Narayanan)
Holt, Allison(MSwE, 5/16, Umphress)
Huhner, Kurt E. (MS, 12/92, Chang)
Hundley, Jacqueline (PhD, 5/12, Umphress)
Jeter, Adam (MSwE, 5/12, Hendrix)
Jodis, Stephen (PhD, 3/94, deMaine)
Krishnappa, Kavyashree (MS, 5/15, Overbey)
Khamis, Abdulrahman (MSwE, Biaz)
Khan, Asad R. (MCSE, 3/98, Hu)
King, Barbara M. (MCSE, 8/96, Carlisle)
Kittanna, Abilash (MSwE, 5/11, Seals)
Kolar, Joseph Dan (MS, Brown)
Kapoor, Sanjay (MCSE, 12/94, Carlisle)
Ledet, Joseph (PhD, 5/16, Yilmaz)
Lee, Byong G. (MS, 8/96, Chang)
Lee, Byong G. (PhD, 6/98, Chang)
Lee, Young (PhD, 12/07, Chang)
Li, Guorui (MS, 4/18, Seals)
Li, Feng (MCSE, 8/96, Carlisle)
Liao, Shih-Sung (MS, 12/92, Chang)
Liao, Shih-Sung (PhD, 3/97, Chang)
McLain, Richard (MSwE, 8/08, Umphress)
Mesbahi El Aouame, Asmae (PhD, 5/13, Umphress)
Miller, William (MS, Umphress)
Morrison, Kelly I. (MS, 12/87, Brown)
Page, Joseph (MS, Pancake)
Pickel, Delane (MSwE, 5/11, Hendrix)
Potghan, Rahul (MSwE, 8/11, Seals)
O'Farrell, John (PhD, 8/11, Baskiyar)
Parrish, Trace (MS, 8/91, Chang)
Raman, Pradeep (MCSE, 3/95, Chang)
Price, Kelly (MS, 8/93, Chang)
Rawajfih, Yasmeen (PhD, 12/16, Umphress)
Reed, Alan (MCSE, 12/93, McCreary)
Ross, Monique (MSwE, 12/11, Chang)
Sanandan, Nyruthya (MS, 12/18, Seals)
Scott, Timothy (MSwE, 12/13, Umphress)
Selvaraj, Prabhu (MS, 8/12, Umphress)
Shaw, Eric (MS, 12/14, Umphress)
Stone, Jeanne, (MS, 6/92, McCreary)
Sultana, Nawrin (MS, 12/16, Overbey)
Sunderrajan, Sanjay Vasudevan (MS, Umphress)
Sultana, Nawrin (PhD, 12/16, Skjellum/Cross)
Tacket, B. Del (MS, 12/87, Phillips)
Teate, Joseph (MS, 6/98, Hendrix)
Thackston, Russell (PhD, 8/13, Umphress)
Thirugnanamurthy, Arivunambi (MS, , Seals)
Talluri , Nayana Teja (MS, 5/15, Seals)
Vaddi, Bala V. (MS, 12/95, Carlisle)
Varanasi , Sudha (MS, 5/15, Qin)

Vuppula, Narayana Reddy (MCSE, 3/94, Chang)
Wang, Jeff (PhD, 12/15, Ku)
Wang, Yaowen (MCSE, 3/94, Chang)
Wear, Almon Wesley, Jr. (MCSE, 3/95, Gong)
Works, Sean (MSwE, 5/08, Umphress)
Xu, Zhigang (MS, 12/97, Carlisle)
Zhang, Liyun (MS, 12/96, Carlisle)
Zhang, Qian (MSwE, 8/16, Seals)
Zhang, Qitong (MSwE, Seals)

3. GRADUATE STUDENTS – CURRENT

Serving as Major Professor)
All completed
Serving as Committee Member)
Hollingsworth, Michael (PhD, Narayanan)

4. COURSE DEVELOPMENT AND COORDINATON

COMP 1210 - Coordinated and revised this first course for CS, SwE, CpE, WirS (Wireless Eng. – Sw) majors, which replaced COMP 2200 beginning Fall 2003. This course has been refined each semester since its inception. A major increment occurred in Spring 2010 when lectures were shifted to the morning of Mon/Wed with labs sections meeting in afternoon of Mon/Wed. The new jGRASP Interactions feature, which allows the user to execute individual Java statements, was introduced in lecture and lab. In Fall 2010, software testing with automated support will be introduced during the second half of the course. Students will write formal test cases for each method in the Java classes they build for their projects. In Fall 2011, Graded activities in lab were supplemented with graded homework due on Tuesday evening prior the quiz in lab on Wednesday. In Fall 2012, a more formal style of software specification was adopted for all weekly projects to emphasize the software engineering aspects of the course. In Fall 2014, all weekly lab activities included working with new jGRASP canvas to improve debugging skills and program understanding. Currently, the course has 12 modules with an activity, quiz, and project in each module. Each student has 38 individual grades during the semester: 12 activities, 12 quizzes, and 12 projects, midterm exam, and final exam.

CPSC 1213/1223 - Fully developed online version of COMP 1210 for CSSE Computer Science online degree (CPSC). CPSC 1213 covers first half of COMP 1210 and CPSC 1223 covers the second half of COMP 1210.

COMP 5710/6710/6716 - Refined our senior/graduate level software quality assurance course during Spring 2010 and Spring 2012.

The following four courses were done under the quarter system prior to Fall 2000.

CSE 422 Introduction to Software Engineering - Completely revised and reoriented our previous undergraduate software engineering course to focus on object-oriented analysis and design and the use of computer-aided software engineering (CASE) tools. Wrote proposals and received educational grants for the development of software tools and course materials, and for the procurement of commercial CASE tools (see Research Contracts and Grants).

CSE 522 Software Engineering I - Completely revised and reoriented our previous undergraduate/ graduate software engineering course to focus on software quality assurance, metrics, and testing. Wrote proposals and received educational grants for the development of software tools and course materials, and for the procurement of commercial CASE tools (see Research Contracts and Grants).

CSE 622 Software Engineering II - Completely revised and reoriented our previous graduate software engineering course to focus on object-oriented analysis and design. Wrote proposals and received educational grants for the development of software tools and course materials, and for the procurement of commercial CASE tools (see Research Contracts and Grants).

5. OTHER CONTRIBUTIONS TO TEACHING

jGRASP SOFTWARE ENVIRONMENT IN CSSE COURSES

jGRASP (http://www.jgrasp.org) is a lightweight integrated development environment created and maintained by the Department of Computer Science and Software Engineering at Auburn University as part of a long-running research project (See "Description of Scholarly Program" on page 22). During the past 10 years, jGRASP has been used in the following courses Auburn: COMP 1200C, 1210, 2210, 2710, and 3000 at Auburn. It is also used at over 400 other institutions (http://www.jgrasp.org/schools.html). As further evidence of the success and the impact of jGRASP on computer science education, it was bundled on CD with over 20 textbooks for about 10 years, including: Lewis and Loftus, *Java Software Solutions*, Pearson Education, now in 9th edition, which is one of the most widely adopted Java textbooks in the U.S. Currently, most of the publishers no longer bundle a CD with their textbooks but rather provide links to resources for their textbooks. jGRASP now includes automatic update notification which allows users to download and install the latest version with a single click.

SOFTWARE ENGINEERING INSTITUTE AFFILIATION

Administrative Liaison for Auburn University as an Academic Affiliate of the Software Engineering Institute (SEI) at Carnegie Mellon University (CMU), 1989-1993; Liaison for SEI Subscriber's Program, 1993-1999.

6. STATEMENT OF TEACHING PHILOSOPHY AND SELF-EVALUTATION

As a faculty member, I am acutely aware of the importance of good teaching and the responsibilities therein to ensure a valuable learning experience for the student. To that end, I continually strive to meet my expectations and those of my students. I begin the first day of each course with a discussion of the syllabus which includes the course objectives and grading criteria. By the end of the first day, I seek to ensure that each student has a clear understanding of the purpose and objectives of the course, how we plan to accomplish the objectives, and what is expected of each student with respect to attendance, exams, homework, and lab assignments. Throughout the course, I strive to build a professional and mutually respectful relationship with each student, and I endeavor to facilitate their learning with my presentation style, inclusion of new material, access to industrial strength tools, careful selection of assignments and projects and fair grading.

Presentation Style - In my years of teaching, I have used numerous presentation styles. The one I have found most appropriate for the courses I teach is straightforward, yet effective. I provide the students with a set of class notes (available online prior to class). During class, the students and I expound upon them with additional examples in the form of problems we solve together which the students must add to the class notes. This approach allows a balance between providing detailed notes and requiring the students to take notes during class, and it has turned traditional lectures into active learning sessions that include time for interesting sidebars to relate students' and instructor's experiences to the material. Previously, when class notes were not provided, either too much time was spent writing details on the board or, when not written on the board, the students failed to include important points in their notes. While this current approach is not perfect, most students appreciate the availability of the class notes and the time they allow for interactive problem solving.

Inclusion of New Material - One of the more challenging aspects of teaching computer science and software engineering is dealing with changes in course content. Since the CSSE curriculum is directly affected by the rapid changes in computer technology, revisions are required in computing courses at frequent intervals. Phasing in the revisions can be difficult for students who are caught between old and new courses. As a faculty member and computing professional, my philosophy has always been to accelerate important changes, especially when I think the students' marketability after graduation will be affected. Although some students are less receptive than others, most realize that change is inherent to computing, and they understand the significance of mastering the new material.

Use of Technology in Teaching – (1) In upper level undergraduate and graduate courses, I believe it is extremely important to provide our students with access to industrial strength software engineering environments. While the learning curve can be somewhat steep for these powerful tools, most of my students have appreciated the opportunity to gain experience with them. (2) In our first course for majors, I believe is it extremely important to leverage technology to make leaning enjoyable. The software visualizations provided by jGRASP as students build and run their programs is just such an example of applying technology to learning.

Large versus Small Projects - My philosophy for teaching freshman or sophomore programming classes is somewhat different from that of teaching an upper level undergraduate and graduate course. While in both cases I focus on fundamental concepts at the appropriate level, in the latter I tend to focus more on preparing students for what to expect as a computing professional after graduation. Most software systems that CSSE graduates will encounter in their new jobs will be extremely large systems as compared to their assignments in a typical CSSE course. Students usually feel in total control with small class projects, whereas in large and more realistic software projects, students are suddenly faced with reading, comprehending, and modifying programs written by others, which can sometimes lead to an unfamiliar feeling of not being in total control. Feedback from former students indicates that their working environments tends to be much like the course and that in retrospect it was one of their more useful academic experiences.

Grading - If I had to select one word to describe my philosophy and goal in grading, it would be "fairness." For example, if I detect in one or more students' responses on an exam an indication of ambiguity in a question, I do not hesitate to adjust my expected response accordingly. While I take great care in grading, and tend to stand firm when the case merits it, if errors are to be made, I strongly believe they should be in the favor of the student. There are few things worse for a student than having the feeling of being treated unfairly in a course.

As a teaching professional, I continually refine the overall organization and content of my courses based on what I feel is best for the students.

B. RESEARCH AND CREATIVE WORK

1. PUBLICATIONS

Within each category, publications are listed from present to past.

jGRASP SOFTWARE RELEASES (published at http://www.jgrasp.org)

J. H. Cross and L. A. Barowski – jGRASP releases are shown with publication dates for the first final release through the last minor update of each major version, along with a brief description of major changes and new features. Prior to the final release of a new version, multiple alpha and/or beta versions are released to allow vetting and comments by users. All comments are carefully reviewed, and modifications are made as appropriate prior to the final release, which usually occurs after several thousand downloads of the beta versions.

jGRASP plugin for CLion (Under Development)

1) **jGRASP plugin for IntelliJ 1.0.0 (June 11, 2020)** – jGRASP Viewers and Canvas for Java and Kotlin in IntelliJ IDEA and Android Studio.
2) **jGRASP Plugin for Eclipse 1.0.0 Beta 8 (January 29, 2020)** – Support for the jGRASP viewers and viewer canvas in the Eclipse IDE (Java debugger).

   jGRASP 2.0.7 (Under development) – Support for Kotlin in progress; restructuring of the jGRASP Java **debugger** and viewer system in order to support the future C/C++ support and CLion plugin.
3) **jGRASP 2.0.6 (January 10, 2020 - April 30, 2020)** – CSD and UML support for Java 11; extensive internal restructuring of the jGRASP Java debugger and viewer system in order to support the viewer/canvas plugin for Eclipse.
4) **jGRASP 2.0.5 (August 1, 2018 – September 12, 2018)** – CSD and UML support for Java 10 and the latest Java 11 pre-release.
5) **jGRASP 2.0.4 (August 3, 2017 - February 12, 2018) –** Support for XML including CSD generation; smooth scrolling in editing windows; trackpad scrolling.
6) **jGRASP 2.0.3 (August 16, 2016 - June 2, 2017)** – Support for multiple desktops (multiple editing windows if the desktops are used tab-pane style)
7) **jGRASP 2.0.2 (March 3, 2016 - July 1, 2016)** – Scalable toolbar icons with arbitrary user-selectable sizing; Java 8 support in **interactions**; a redesigned HTML 5 help system to work around new browser security restrictions.
8) **jGRASP 2.0.1 (December 16, 2014 - June 24, 2015)** – Java 8 support for CSD and CPG generation.
9) **jGRASP 2.0 (August 5, 2013 - September 30 2014)** – The viewer canvas for multiple dynamic viewers; Unicode support in editing windows; support for Python including CSD generation; removal of "extra" three space indent in CSD generation; indentation size detection and adjustment in CSD generation; more compact CSD structure for switch/case statements; signed install files and executables.
10) **jGRASP 1.8.8 (August 16, 2010 - April 7, 2013)** – Java 7 support for CSD, CPG, interactions; project-based compile, run, etc.; unbuffered I/O for user programs on Windows; pure Java mode available (no native components needed to run/use jGRASP).
11) **jGRASP 1.8.7 (August 3, 2009)** – Interactions (REPL) for Java.
12) **jGRASP 1.8.6 (March 4, 2007)** – Direct support for PostScript printing
13) **jGRASP 1.8.5 (January 8, 2007)** – Subpixel antialiasing in editing windows.
14) **jGRASP 1.8.0 - 1.8.4 (July 18, 2005 - August 1, 2006)** – More compact CSD structure for Java anonymous inner classes; startup settings and improved control shell for Mac OS X; Undo and Redo for CSD generation; (Default) option of single menu, toolbar, messagebar rather than per-window; GNU language extension support for C/C++ CSDs.

15) **jGRASP 1.7.1 (October 8, 2004)** – New Windows installer using NSIS; Control Shell and wedge status move from taskbar to system tray on Windows; tool tips for partially obscured text.

16) **jGRASP 1.7.0 (June 1, 2004)** – Auto-step for the Java debugger; elimination of default project (replaced with projectless support); multiple open projects; support for workspaces; workbench method invocation during debugging; drag-and-drop to launch Java viewers.

17) **jGRASP 1.6.x (August 17, 2003 - March 1, 2004)** – Windowbar; CSD and CPG support for Java 5.

18) **jGRASP 1.5.x (June 2, 2002 - December 5, 2002)** – UML-to-source navigation (declarations and uses); CSD exit arrows to "finally" for return/break/continue in Java, Charset support for file loading/saving.

19) **jGRASP 1.4.x (October 25, 2001 - November 1, 2001)** – Mouse wheel support in editing windows; support for Objective-C including CSD generation.

20) **jGRASP 1.3.x (May 14, 2001 - October 8, 2001)** – Native startup shell for Mac OS X; UML printing; pty connection for Cygwin applications (eliminates I/O buffering); run in MSDOS shell for Windows.

21) **jGRASP 1.2.x (December 1, 2000 - December 21, 2000)** – Java debugger, anti-aliased fonts in editing windows.

22) **jGRASP 1.1.x** – Regular expressions for find and search multiple files; block mode select, cut, copy paste; Redo; multi-operation Undo (replace all, etc.).

BOOKS

1) J. H. Cross and L. A. Barowski, *jGRASP Tutorials*, available online (http://www.jgrasp.org), September 2009, 198 pages (revised August 8, 2013 for jGRASP 2.0).

2) E. Roberts, G. Engel, J. Cross, and R. Shackelford (Co-Chairs), *Curricula 2001 – Computer Science*, IEEE Computer Society Press, December 15, 2001, 246 pages.

3) K. H. Chang and J. H. Cross, Editors, *Proceedings of ACM Southeast Conference*, Tuskeegee, AL, April 18-19, 1996, 349 pages.

4) J. H. Cross and E. Ellis, Editors, *Proceedings of the Southeast Regional ACM Computer Science Conference*, April 21-22, 1988, Mobile, Alabama, 732 pages.

REFEREED JOURNAL PUBLICATIONS and SPECIAL COLLECTIONS

1) J. H. Cross, T. D. Hendrix, D. A. Umphress, L. A. Barowski, J. Jain, and L. N. Montgomery, "Robust Generation of Dynamic Data Structure Visualizations with Multiple Interaction Approaches," *ACM Transactions on Computing Education*, Vol. 9, Issue 2 (June 2009), 13:1–13:32.

2) J. H. Cross, T. D. Hendrix, L. A. Barowski, "Integrating Multiple Approaches for Interacting with Dynamic Data Structure Visualizations," *Electronic Notes in Theoretical Computer Science 224,* Elsevier, Vol. 224, 2009, 141–149.

3) D. A. Umphress, T. D. Hendrix, J. H. Cross, and S. Maghsoodloo, "Software Visualizations for Improving and Measuring the Comprehensibility of Source Code," *Science of Computer Programming*, Elsevier, 60 (2006), 121-133.

4) D. A. Umphress, T. D. Hendrix and J. H. Cross, "Software Process in the Classroom: The Capstone Project Experience," *IEEE Software*, Vol. 19, No. 5, September/October 2002, 78-85.

5) T. D. Hendrix, J. H. Cross, and S. Maghsoodloo, "The Effectiveness of Control Structure Diagrams in Source Code Comprehension Activities," *IEEE Transactions on Software Engineering*, Vol. 28, No. 5, May 2002, 463-477.

6) T. D. Hendrix and J. H. Cross, "Graphics and Animation for Software Visualization," *National Forum*, Vol. 78, No. 4, pp. 22-25, 1998.

7) J. H. Cross, S. Maghsoodloo, and T. D. Hendrix, "Control Structure Diagrams: Overview and Initial Evaluation," J*ournal of Empirical Software Engineering*, Vol. 3, No. 2, 1998, 131-158.

8) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, "Grasping Software," *Journal of Computing in Small Colleges*, Vol. 13, No. 3, January, 1998, 108-118.

9) J. H. Cross, K. H. Chang, T. D. Hendrix, R.O. Chapman, and P. A. McQuaid, "Visualization and Measurement of Source Code," *CrossTalk Journal of Defense Software Engineering*, December 1997, 16-19.

10) P. A. McQuaid, K. H. Chang, and J. H. Cross, "The Profile Metric: A Complexity Metric to Improve Software Quality," *Software Quality*, August 1997, 1-5.

11) J. H. Cross and T. H. Hendrix, "Language Independence," P. Eades and K. Zhang (eds.) S*oftware Visualization*, Series on Software Engineering and Knowledge Engineering, Vol.7, 1996, 27-45.

12) K. H. Chang, J. H. Cross, W. H. Carlisle and S. Liao, "A Performance Evaluation of Heuristics-Based Test Case Generation Methods for Software Branch Coverage," *International Journal of Software Engineering and Knowledge Engineering*, Vol. 6, No. 4., 1996, 585-608.

13) K. H. Chang, P. Raman, W. H. Carlisle and J. H. Cross, "A Self-Improving Helpdesk Service Using Case-Based Reasoning Techniques, *Computers in Industry*, Vol. 30, 1996, 113-115.

14) J. H. Cross and R. S. Dannelly, "Reverse Engineering Graphical Representations of X Source Code," *International Journal of Software Engineering and Knowledge Engineering*, Vol. 6, No. 2, June 1996, 1-21.

15) L. M. Wills and J. H. Cross, "Recent Trends and Open Issues in Reverse Engineering," *Journal of Automated Software Engineering*, Vol. 3, March 1996, 165-172.

16) J. H. Cross and T. M. Phillips, "Integrating Traditional Software Engineering Methods and Object-Oriented Methods with Ada 95," *Softwaretechnik-Trends*, Vol. 16, No. 1, February 1996, 21-27.

17) J. H. Cross, K. H. Chang, and T. H. Hendrix, "GRASP/Ada 95 - Visualization with Control Structure Diagrams," *CrossTalk Journal of Defense Software Engineering*, January 1996, Vol. 9, No. 1, 20-24.

18) T. J. Scott and J. H. Cross, "Team Selection Methods for Student Programming Projects," *Lecture Notes in Computer Science: Software Engineering Education*, Vol. 895, March/April 1995, 295-303.

19) E. J. Chikofsky and J. H. Cross, "Reverse Engineering of Software," *Encyclopedia of Software Engineering*, John Wiley & Sons, New York, Vol. 2, 1994, 1077-1084.

20) J. H. Cross and Spencer Rugaber, Report on the Working Conference on Reverse Engineering (invited), *IEEE Computer*, Vol. 26, No. 11, Nov. 1993, 83-84.

21) K. H. Chang, J. H. Cross, W. H. Carlisle and D. B. Brown, "A Framework For Intelligent Test Data Generation," *Journal of Intelligent and Robotic Systems*, 5, 1992, 147-165.

22) J. H. Cross, E. J. Chikofsky and C. H. May, "Reverse Engineering," *Advances in Computers*, Vol. 35, 1992, 199-254.

23) D. B. Brown, J H. Cross, R. Roggio, C. McCreary, "An Automated Oracle For Software Testing," *IEEE Transactions on Reliability*, Vol. 41, No. 2, June 1992, 272-279.

24) J. H. Cross, K. H. Chang, W. H. Carlisle and D. B. Brown, "Expert System Assisted Test Data Generation For Software Branch Coverage," *Data & Knowledge Engineering*, Vol.6, No. 4, July 1991, 279-295.

25) W. H. Deason, D. B. Brown, K. H. Chang and J. H. Cross, "A Rule-Based Software Test Data Generator," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 3, No. 1, Mar. 1991, 108-117.

26) J. H. Cross, S. V. Sheppard and W. H. Carlisle, "Control Structure Diagrams for Ada," *Journal of Pascal, Ada, and Modula 2*, Vol. 9, No. 5, Sep./Oct. 1990, 26-33.

27) J. H. Cross, "GRASP/Ada Uses Control Structure," *IEEE Software*, May 1990, 62.

28) E. J. Chikofsky and J. H. Cross, "Reverse Engineering and Design Recovery - A Taxonomy," *IEEE Software*, Jan. 1990, 13-17.

29) K. H. Chang and J. H. Cross, "Software Safety in the Space Station Flight Telerobotic Servicer (FTS)," *Journal For Occupational Accidents*, 10, 1988, 179-189.

REFEREED CONFERENCE PUBLICATIONS

1) J. H. Cross, T. D. Hendrix, L. A. Barowski, and D. A. Umphress, "Dynamic Program Visualizations – An Experience Report," *Proceedings SIGCSE 2014*, Atlanta, GA, March 5-8, 2014, 609-614.

2) J. H. Cross, T. D. Hendrix, and L. A. Barowski, "Combining Dynamic Program Viewing and Testing in Early Computing Courses," Proceedings of COMPSAC 2011, Munich, Germany, July 18-22, 2011, 184-192.

3) J. H. Cross, T. D. Hendrix, D. A. Umphress, and L. A. Barowski, "Exploring Accessibility and Visibility Relationships in Java," *Proceedings of ITiCSE 2008*, Madrid, Spain, June 30 - July 2, 2008, 103-108.

4) L. N. Montgomery, J. H. Cross, T. D. Hendrix, and L. A. Barowski, "Testing the jGRASP Structure Identifier with Data Structure Examples from Textbooks," *Proceedings ACM Southeast Conference 2008*, Auburn, AL, March 28-29, 2008, 198-203.

5) J. H. Cross, T. D. Hendrix, J. Jain, and L. A. Barowski, "Dynamic Object Viewers for Data Structures," *Proceedings SIGCSE 2007*, Covington, KY, March 7-10, 2007, 4-8.

6) T. D. Hendrix, J. H. Cross, J. Jain, and L. A. Barowski, "Providing Data Structure Animations in Lightweight IDE," *Proceedings of Fourth Program Visualizations Workshop*, June 29-30, 2006, Florence, Italy, Electronic Notes in Theoretical Computer Science 178 (2007) 101–109.

7) J. Jain, J. H. Cross, T. D. Hendrix, and L. A. Barowski, "Experimental Evaluation of Verifying Object Viewers for Java," Proceeding of SoftVis 2006, Brighton, UK, September 4-5, 2006, 27-36.

8) J. H. Cross and T. D. Hendrix, "jGRASP: A Lightweight IDE with Dynamic Object Viewers for CS1 and CS2," *Proceedings of ITiCSE 2006*, Bologna, Italy June 25-28, 2006, 356.

9) T. D. Hendrix, D. A. Umphress, and J. H. Cross, "Designing a First Year Project Course to Engage freshmen Software Engineers: An Experience Report," *Proceedings of 19th Conference on Software Engineering Education and Training (CSEET)*, April 19-23, 2006, North Shore, Oahu, Hawaii.

10) D. A. Umphress, J. H. Cross, and L. A. Barowski, "Bringing Cellular Phone Software Industry Practices to the Software Development Classroom," *Proceedings of the 2005 ASEE Annual Conference* (Portland OR, June 2005).

11) J. Jain, J. H. Cross, and T. D. Hendrix, "Qualitative Comparison of Systems Facilitating Data Structure Visualization," *Proceedings of ACM Southeastern Conference 2005*, March 18-20, 2005, Kennesaw, GA.

12) D. A. Umphress, J. H. Cross, J. Jain, N. Meda, and L. A. Barowski, "Bringing J2ME Industry Practices into the Classroom" Proceedings of the SIGCSE 2004 Technical Symposium, Norfolk, VA, March 3-6, 2004, 301-305.

13) T. D. Hendrix, J. H. Cross, and L. A. Barowski, "An Extensible Framework for Providing Dynamic Data Structure Visualizations in a Lightweight IDE" Proceedings of the SIGCSE 2004 Technical Symposium, Norfolk, VA, March 3-6, 2004, 387-391.

14) J. Jain, J. H. Cross, D. A. Umphress, and L. A. Barowski, "Extending the jGRASP IDE for Wireless Application Development with J2ME," *Proceedings of 2003 ACM Southeast Conference*, Savannah, GA, March 7-8, 2003.

15) J. H. Cross, T. D. Hendrix, and L. A. Barowski. "Using the Debugger as an Integral Part of Teaching CS1," *Proceedings of* Frontiers *in Education 2002*, Boston, MA, November 5-9, 2002, F1G-1– F1G-6.

16) L. A. Barowski and J. H. Cross, "Extraction and Use of Class Dependency Information for Java," *Proceedings of the 9th Working Conference on Reverse Engineering*, Richmond, VA, October 28 – November 1, 2002, 309-315.

17) J. H. Cross, T. Dean Hendrix, and Larry A. Barowski, "Using UML Class Dependency Diagrams in CS1," Proceedings of 2002 ACM Southeast Conference, Raleigh, NC, April 26-27, 2002, 119-123.

18) Y. Lee, K.H. Chang, D.A. Umphress, T.D. Hendrix, and J.H. Cross, "Automated Tool for Software Quality Measurement," *Proceedings of the Thirteenth International Conference on Software Engineering and Knowledge Engineering*, Buenos Aires, Argentina, June 13-15, 2001, 196-202.

19) J. H. Cross, T. Dean Hendrix, and Larry A. Barowski, “Debugging [in] CS1,” Proceedings of 2001 ACM Southeast Conference, Athens, GA, March 16-17, 2001.

20) T. Dean Hendrix, James H. Cross II, and Saeed Maghsoodloo, “An Experimental Validation of Control Structure Diagrams,” *Proceedings of the 7th Working Conference on Reverse Engineering*, Brisbane, Australia, November 23-25, 2000.

21) Larry A. Barowski, James H. Cross, and T. Dean Hendrix, “From C to Java: A Case Study in Portability, Efficiency, and Maintenance,” *Proceedings of the 38th Annual Southeast ACM Conference*, Clemson, SC, April 1-3, 2000.

22) T. Dean Hendrix, James H. Cross, Saeed Maghsoodloo and Matthew L. McKinney, “Do Visualizations Improve Program Comprehensibility? Experiments with Control Structure Diagrams for Java,” *Proceedings of the 31st SIGCSE Technical Symposium on Computer Science Education*, Austin, TX, March 8-12, 2000.

23) J. H. Cross, T. D. Hendrix, K. S. Mathias, and L. A. Barowski. “Software Visualization and Measurement in Software Engineering Education,” *Proceedings of Frontiers in Education 1999*, San Juan, Puerto Rico, November 10-13, 1999, pp. 12b1-5 to 12b1-9.

24) K. S. Mathias, J. H. Cross, T. D. Hendrix, and L. A. Barowski, “The Role of Software Measures and Metrics in Studies of Program Comprehension,” *Proceedings of 1999 Southeast ACM Conference*.

25) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “Visual Support for Incremental Abstraction and Refinement in Ada 95,” *Proceedings of SIGAda’98*, Washington, D.C., November 10-12, 1998.

26) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “Scaleable Visualizations to Support Reverse Engineering,” *Proceedings of the 5th Working Conference on Reverse Engineering*, Honolulu, Hawaii, October 12-14, 1998.

27) T. D. Hendrix, J. H. Cross, J. C. Teate, L. A. Barowski, and K. S. Mathias, “Assessing GRASP Utilization Through Instrumentation,” *Proceedings 12th ASEET Symposium*, Monterey, CA, July 27-30, 1998.

28) J. H. Cross, T. D. Hendrix, L. A. Barowski, and K. S. Mathias, “Improving Comprehensibility with Diagramming, Folding, and Coloring,” *Proceedings of 1998 Reverse Engineering Forum*, Florence, Italy, March 9 - 11, 1998, 10.1-10.6.

29) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “Providing Enhanced Visual Support for Software Development and Maintenance,” Proceedings of 36th ACM Southeast Conference, Marietta, GA, April 1-3, 1998, 23-28.

30) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “Visualization of Control Structure and Complexity in Ada 95,” *Proceedings of Tri-Ada'97*, St. Louis, November 9-13, 1997, 135-139.

31) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “Tool Support for Reverse Engineering Multi-Lingual Software,” Fourth Working Conference on Reverse Engineering, Amsterdam, The Netherlands, October 6-8, 1997, 136-143.

32) T. D. Hendrix, J. H. Cross, L. A. Barowski, and K. S. Mathias, “GRASP: Software Engineering with Ada 95 for Windows 95 and NT,” Proceedings of the 11th ASEET Symposium, Monmouth, NJ, June 12-13, 1997.

33) S. L. Collins, K. H. Chang, J. H. Cross, W. H. Carlisle, "Facilitation of Immunoassay Through Object Identification," *Proceedings of 10th IEA/AIE Conference,* Atlanta Georgia, June 10-13, 1997, 381-388.

34) T. D. Hendrix, J. H. Cross, L. A. Barowski, J. C. Teate, K. S. Mathias, and T. I. Morris, "A Visualization and Measurement Environment for Software Engineering," *Proceedings of the 35th ACM Southeast Conference*, Murfreesboro, TN, April 2-4, 1997, 106-111.

35) T. D. Hendrix, J. H. Cross, L. A. Barowski, and J. C. Teate, "A Visual Development Environment for Multi-Lingual Curricula," Proceedings of the SIGCSE '97 Technical Symposium, San Jose, CA, February 27-March 1, 1997, 20-24.

36) P. A. McQuaid, K. H. Chang, J. H. Cross, "Visualizing Software Complexity," *Proceedings of the Decision Sciences Institute*, November 24-26, 1996, Orlando, FL, 527-529.

37) J. H. Cross, L. Barowski, D. Hendrix, and J. Teate, "Control Structure Diagrams for Ada 95," *Proceedings of Tri-Ada'96*, Philadelphia, December 3-7, 1996, 143-150.

38) P. A. McQuaid, K. H. Chang, J. H. Cross, "The Profile Metric: A Complexity Metric to Improve Software Quality," *Proceedings of the Fifth European Conference on Software Quality*, Dublin, Ireland, September 16-19, 1996, 166-175.

39) J. H. Cross, "GRASP/Ada: A GUI Front-End for GNAT," *Proceedings* of Ada Software Engineering Education and Training Symposium, Prescott, AZ, June 25-28, 1996, 19-26.

40) M. Gibson, W. Boulton, J. Cross, E. Ramcharandas, W Joyner, W. Kane, and M. Wiseman, "Managing by Architecture," *Proceedings of PRIISM'96*, Wailea, Hawaii, January 3-5, 1996, 163-167.

41) K. H. Chang, P. Raman, W. H. Carlisle, and J. H. Cross, "SmartUSA: a Case-Based Reasoning System for Customer Services, " *Proceedings of IEA/AIE-96 Conference*, June 4-7, 1996, Fukuoka, Japan, to appear.

42) J. H. Cross, K. H. Chang, P. A. McQuaid, "GRASP/Ada 95: Visualization and Measurement," *Proceedings of Software Technology Conference*, April 21-26, 1996, Salt Lake City, UT, 171-182.

43) J. H. Cross, L. Barowski, D. Hendrix, and J. Teate, "Using GRASP/Ada with GNAT," *Proceedings of ACM Southeast Conference*, Tuskeegee, AL, April 18-19, 1996, 316-318.

44) J. H. Cross and T. M. Phillips, "Experiences with Ada 95 in CS1 and CS2," *Proceedings of ACM Southeast Conference*, Tuskeegee, AL, April 18-19, 1996, 271-273.

45) P. A. McQuaid, K. H. Chang, J. H. Cross, W. H. Carlisle, "Complexity Support for Program Modularization," *Proceedings of ACM Southeast Conference*, Tuskeegee, AL, April 18-19, 1996, 319-321.

46) J. H. Cross and T. M. Phillips, Integrating Traditional Software Engineering Methods and Object-Oriented Methods with Ada 95," *Proceedings of IWSEE3-96*, Berlin, Germany, 21-27. [also in *Softwaretechnik-Trends*]

47) J. H. Cross and T. M. Phillips, Successfully Integrating Traditional and Object-Oriented Approaches with Ada 95," *Proceedings of SIGCSE'96*, February 15-17, 1996, Philadelphia, 19-23.

48) P. A. McQuiad, K. H. Chang, and J. H. Cross, "A Complexity Metric to Aid Software Testing and Maintenance," *Proceedings of Decision Sciences Institute*, Boston, MA, 1995, Vol. 2, 862-864.

49) J. H. Cross and T. D. Hendrix, "Using Generalized Markup and SGML for Reverse Engineering Graphical Representations of Software," *Proceedings of Working Conference on Reverse Engineering*, July 16-19, 1995, Toronto, 2-6.

50) T. D. Hendrix and J. H. Cross, "Language Independent Generation of Graphical Representations of Source Code," *Proceedings of ACM Computer Science Conference*, February 28 - March 2, 1995, Nashville, TN, 66-72.

51) J. H. Cross, "Improving Comprehensibility of Ada with Control Structure Diagrams," *Proceedings of Software Technology Conference*, April 11-14, 1994, Salt Lake City, UT (distributed on CD-ROM), 25 pages.

52) R. S. Dannelly and J. H. Cross, "Reverse Engineering X Window System Based Source Code," *Proceedings of 32nd ACM Southeast Conference*, March 17-18, 1994, Tuscaloosa, AL, 41-45.

53) T. J. Scott, L. H. Tichnore, R. B. Bisland, and J. H. Cross, "Team Dynamics in Large Student Programming Projects," *Proceedings of 25th SIGCSE Technical Symposium*, March 10-12, 1994, Phoenix, AZ, 111-115.

54) K. H. Chang, J. H. Cross, W. H. Carlisle and S. Liao, "An Empirical Study of Intelligent Test Data Generation Methods for Software Branch Coverage," *Proceedings of International Conference on Software Engineering and Knowledge Engineering*, June 15-17, 1993, San Francisco, 437-444.

55) J. H. Cross, "GRASP/Ada: Reverse Engineering Control Structure Diagrams," *Proceedings of Working Conference on Reverse Engineering*, May 21-23, 1993, Baltimore, MD, 107-116.

56) K. H. Chang, W. H. Carlisle, J. H. Cross, E. Richards and D. B. Brown, "Testing of Ada Programs Containing Tasks," *Proceedings of International Conference on Software Engineering and Knowledge Engineering*, June 27-29, 1991, Skokie, IL, 155-159.

57) K. H. Chang, W. H. Carlisle, J. H. Cross and D. B. Brown, "A Heuristic Approach To Test Case Generation," *Proceedings of the ACM Computer Science Conference*, Mar. 5-7, 1991, San Antonio, TX, 174-180.

58) J. H. Cross, K. I. Morrison, C. H. May, "Generation of Graphical Representations From Source Code," *Proceedings of the Southeast Regional ACM Computer Science Conference*, April 18-20, 1990, Greenville, South Carolina, 54-62.

59) W. H. Carlisle, K. H. Chang, J. H. Cross, W. Keleher, "Automated Unit-Level Testing With Heuristic Rules," *Proceedings of the Fifth Conference on Artificial Intelligence for Space Applications*, May 22-23, 1990, Huntsville, Alabama, 567-576.

60) K. H. Chang, J. H. Cross, W. H. Carlisle and D. B. Brown, "An Intelligent Test Data Generator For Software Branch Coverage," *Proceedings of International Conference on Software Engineering and Knowledge Engineering*, June 15-17, 1989, Chicago, 13-18.

61) K. H. Chang, J. H. Cross, and S. Dannelly, "Software Safety Issues For The Space Station Flight Telerobotic Servicer," *Proceedings of SPIE - Space Station Automation IV*, November 6-11, 1988, Cambridge, Massachusetts, 80-85.

62) J. H. Cross and S. V. Sheppard, "The Control Structure Diagram," *Proceedings of the 7th Annual Phoenix Conference On Computers and Communications*, March 16-18, 1988, 274-278

63) J. H. Cross and S. V. Sheppard, "Graphical Extensions For Pseudo-Code, PDLs, and Source Code," *Proceedings of the ACM Computer Science Conference*, February 23-25, 1988, Atlanta, Georgia, 520-528.

64) J. H. Cross and S. V. Sheppard, "The Control Structure Diagram: An Automated Graphical Representation for Software," *Proceedings of the 21st Hawaii International Conference on System Sciences*, January 5-8, 1988, 446-454.

NON-REFEREED PUBLICATIONS

1) T. D. Hendrix, J. H. Cross, L. A. Barowski, K. S. Mathias, “GRASP: Software Engineering with Ada 95 for Windows 95 and NT,” Ada Letters, Vol. 18, No. 1, January/February 1998, 70-77.

2) J. Cross, A. Quilici, L. Wills, P. Newcomb, and E. Chikofsky, "Second Working Conference on Reverse Engineering (WCRE) Summary Report," *Software Engineering Notes*, Vol. 20, No. 5, December 1995, 23-26.

3) J. H. Cross, T. D. Hendrix, M. L. Sadler, and B. R, Randles, "Reengineering a Program Visualization Tool," *Proceedings of 33rd ACM Southeast Conference*, March 17-18, 1995, Clemson, SC, 265-266.

4) J. H. Cross, "GRASP/Ada: The Prototype for Generating Control Structure Diagrams," *Proceedings of 31st ACM Southeast Conference*, April 15-16, 1993, Birmingham, AL, 359-362.

5) S. Alavioon, K. H. Chang, W. H. Carlisle and J. H. Cross, "Achieving Communication Coverage for Testing Ada Tasks," *Proceedings of 31st ACM Southeast Conference*, April 15-16, 1993, Birmingham, AL, 355-358.

6) J. H. Cross and K. C. Waddel, "An Instrument for Empirical Evaluation of Graphical Representations for Algorithms," *Proceedings of the 27th Southeast Regional ACM Computer Science Conference*, April 4-6, 1989, Atlanta, GA, 343-347.

7) J. H. Cross, K. I. Morrison and C. H. May, "GRASP/Ada: Graphical Representation of Algorithms, Structures and Process for Ada (Phase I)," *Proceedings of the 27th Southeast Regional ACM Computer Science Conference*, April 4-6, 1989, Atlanta, GA, 4-10.

8) J. H. Cross, "Automated Graphical Representations For Algorithms," *Advance Working Papers of the Second International Workshop on Computer-Aided Software Engineering*, July 12-15, 1988, Cambridge, Massachusetts, 30.7-30.10.

9) J. H. Cross, K. H. Chang, and S. Dannelly, "Software Safety in Space," *Proceedings of the Southeast Regional ACM Computer Science Conference*, April 21-22, 1988, Mobile, Alabama, 63-67.

10) K. C. Waddel and J. H. Cross, "Empirical Evaluations of Graphical Representations of Algorithms," *Proceedings of the Southeast Regional ACM Computer Science Conference*, April 21-22, 1988, Mobile, Alabama, 496-502.

ABSTRACTS / PRESENTATIONS / TUTORIALS / WORKSHOPS

1) J. H. Cross, "Using Eclipse and IntelliJ with Dynamic Viewers for Program Understanding and Debugging in Java," Tutorial (90 minutes), CCSC:SE Conference 2019 (Auburn University, October 25-26, 2019).

2) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at APSI CSP Workshop for High School Teachers (Auburn University, AL, July 11, 2018).

3) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at WeTeach_CS Summit 2018, for High School Teachers, organized/hosted by the University of Texas at Austin (Georgetown, TX, June 18-20, 2018).

4) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at WeTeach_CS Summit 2017, for High School Teachers, organized/hosted by the University of Texas at Austin (Austin, TX, June 5-7, 2017).

5) J. H. Cross and T. D. Hendrix, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at APSI CSP Workshop for High School Teachers (Auburn University, AL, June 28, 2016).

6) J. H. Cross and T. D. Hendrix, "jGRASP - An IDE with Software Visualizations for Program Understanding," Workshop at CSTA-Alabama Meeting (CS High School Teachers) (Tuscaloosa, AL, June 22, 2015).

7) J. H. Cross and T. D. Hendrix, "Dynamic Program Visualizations for Java," Workshop at CSTA-Alabama Meeting (CS High School Teachers) (Tuscaloosa, AL, June 23, 2014).

8) J. H. Cross, T. D. Hendrix, and D. A. Umphress, "Dynamic Program Visualizations for Java," Workshop at SIGCSE 2014 (Atlanta, GA, March 8, 2014).

9) J. H. Cross, J., "Using the New jGRASP Canvas of Dynamic Viewers for Program Understanding and Debugging in Java Courses," Tutorial at CCSE Midwest Conference (University of Findlay, Findlay, OH), September 20, 2013.

10) J. H. Cross, "jGRASP: "Using the New jGRASP Canvas of Dynamic Viewers for Program Understanding and Debugging in Java," Tutorial at CCSC Southeast Conference (Spelman College, Atlanta, GA, November 12-13, 2010).

11) J. H. Cross, "jGRASP: An Integrated Development Environment with Intuitive Visualizations for Teaching Hard Concepts in Java," Tutorial at CCSC Southeast Conference (Spelman College, Atlanta, GA, November 12-13, 2010).

12) J. H. Cross, "jGRASP: An Integrated Development Environment with Intuitive Visualizations for Teaching Hard Concepts in Java," Pre-Conference Workshop at CCSC Central Plains Conference (Park University, Parkville, MO, April 9-10, 2010).

13) J. H. Cross, "jGRASP: Teaching Hard Concepts with Intuitive Visualizations," Tutorial at Virginia Community College System IST Peer Group Conference (Abingdon, VA, CO, November 13-14, 2008).

14) J. H. Cross, "jGRASP: Teaching Hard Concepts with Intuitive Visualizations," Tutorial at CCSC Rocky Mountain Conference (Colorado Springs, CO, October 17-18, 2008).

15) J. H. Cross, "jGRASP: Intuitive Visualizations for Understanding Software," Invited presentation, Troy Montgomery (Montgomery, AL., April 29, 2008).

16) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Tutorial at Tuskegee University (Tuskegee, AL, February 14, 2008).

17) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Tutorial at CCSC-Southeast 2007 (Myrtle Beach, SC, November 2-3, 2007).

18) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at CCSC-East 2007 (St. Joseph College, Patchogue, Long Island, NY, October 10-11, 2007).

19) J. H. Cross, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at CCSC-Midwest 2007 (Miami University – Hamilton, OH, September 28-29, 2007).

20) J. H. Cross, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at FIE 2006 (San Diego, CA, October 28, 2006).

21) J. H. Cross, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at CCSC-SC 2006 (Hunstville, TX, April 21, 2006).

22) J. H. Cross, T. D. Hendrix, and D. A. Umphress, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at SIGCSE 2006 (Houston, TX, March 1, 2006).

23) J. H. Cross and D. A. Umphress, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at FIE 2004 (Savannah GA, October 20, 2004).

24) J. H. Cross, T. D. Hendrix, and D. A. Umphress, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at SIGCSE 2004 (Norfolk, VA, March 3, 2004).

25) J. H. Cross and T. D. Hendrix, “jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond,” Workshop at SIGCSE 2003 (Reno, Nevada, February 21, 2003).

26) J. Cross, “GRASP: Overview and Future,” presentation to Auburn ACM Student Chapter, April 29, 1998.

27) J. Cross, M. Olsem, C. Sittenaurer, "Reengineering Tutorial: Salvaging Legacy Software Assets," 7th Software Technology Conference, April 10-14, 1995, Salt Lake City, UT, 87 pages.

28) D. Cordes, J. Cross, B. Malloy, and A. Parrish, "Ada in the Undergraduate Curriculum," Panel Session, *Proceedings of 33rd ACM Southeast Conference*, March 17-18, 1995, Clemson, SC, 261.

29) J. H. Cross, "Automatic Generation of Control Structure Diagrams," *Proceedings of 4th Reengineering Forum*, September 19-21, 1994, Victoria, B.C.

30) J. H. Cross, "Reverse Engineering and Reengineering," Honeywell Software Reuse Workshop, August 19, 1994, Minneapolis, MN.

31) T. J. Scott, L. H. Tichnore, R. B. Bisland, and J. H. Cross, "Handling Interpersonal Issues in Team Projects," *Proceedings of 25th SIGCSE Technical Symposium*, March 10-12, 1994, Phoenix, AZ, 397-398.

32) S. Sherman, F. Calliss, J. Cross, J. Hartman, and A. Wasserman, "Software Reengineering - Hype and Reality," Panel Session, ACM Computer Science Conference, March 10, 1994, Phoenix, AZ.

33) F. Calliss, J. H. Cross, V. Rajlich, and J. Urban, "Reverse Engineering Panel Overview," (invited) *Proceedings of International Conference on Software Engineering and Knowledge Engineering*, June 15-17, 1993, San Francisco, 544-545.

34) J. H. Cross and K. Shackelford, "GRASP/Ada: Reverse Engineering Tools for Ada," *Proceedings of 3rd Reverse Engineering Forum*, September 15-17, 1992, Burlington, MA.

35) J. H. Cross, "Generating Graphical Representations From Source Code," *Proceedings of 2rd Reverse Engineering Forum*, April 23-24, 1991, St. Louis, MO.

36) J. H. Cross, "Graphically-Oriented Reverse Engineering Tools for Ada Software," Proceedings of the ACM Computer Science Conference, February 20-23, 1990, Washington, D.C., 428.

37) J. H. Cross, "Graphical Representations For Reverse Engineering and Maintenance," *Advance Working Papers of the Third International Workshop on Computer-Aided Software Engineering*, supplementary vol., July 17-21, 1989, London, UK., 451.

38) K. C. Waddel and J. H. Cross, "Survey of Empirical Studies of Graphical Representations For Algorithms," Abstract, *Proceedings of the ACM Computer Science Conference*, February 23-25, 1988, Atlanta, Georgia, 696.

39) "Graphical Stepwise Refinement with Control Constructs", User-System Interface Workshop, Austin, Texas, January 31, 1986.

TECHNICAL REPORTS

1) J. H. Cross, "AASERT Summary Technical Report, July 14, 1997.

2) J. H. Cross, "Update of GRASP/Ada 95 Reverse Engineering Tools For Ada," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (Delivery Order No. 33, NAS8-39131), September 29, 1996, 32 pages.

3) J. H. Cross (PI), "GRASP/Ada 95 Modification," *Final Report*, DISA, Contract No. DCA100-96-1-0006, November 8, 1996, 32 pages.

4) J. H. Cross (PI), "Undergraduate Curriculum and Course Development - CSE 422, 522, 622," *Final Report*, DISA, Contract No. DCA100-96-1-0005, November 8, 1996, 8 pages.

5) J. H. Cross, "GRASP/Ada - Modification for Ada 9X," *Final Report*, ARPA, Contract No. F29601-94-K-0029, October 2, 1995, 43 pages.

6) J. H. Cross (PI), "Migration to Ada in CSE422 Introduction to Software Engineering and CSE522 Software Engineering," *Final Report*, ARPA, Contract No. F29601-94-K-0030, October 2, 1995, 8 pages.

7) J. H. Cross (PI) and T. M. Phillips, "Migration to Ada in CSE200 Fundamentals of Computer Science I and CSE220 Fundamentals of Computer Science II," *Final Report*, ARPA, Contract No. F29601-94-K-0031, October 2, 1995, 9 pages.

8) J. H. Cross, "Update of GRASP/Ada Reverse Engineering Tools For Ada," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (Delivery Order No. 30, NAS8-39131), June 21, 1995, 50 pages.

9) J. H. Cross, "Update of GRASP/Ada Reverse Engineering Tools For Ada," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (Delivery Order No. 21, NAS8-39131), December 14, 1993, 41 pages + Appendices.

10) J. H. Cross, "Update of GRASP/Ada Reverse Engineering Tools For Ada," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (Delivery Order No. 13, NAS8-39131), December 31, 1992, 30 pages + Appendices.

11) J. H. Cross, et.al., "Reverse Engineering Tools For Ada," *Task 2, Phase 3 Final Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), September 1991, 75 pages + Appendices. (Contribution: 60%)

12) D. B. Brown, K. H. Chang, W. H. Carlisle, and J. H. Cross, "QUEST - Testing Tools For Ada," *Task 1, Phase 3 Final Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), September 1991, 63 pages + Appendices. (Contribution: 10%)

13) J. H. Cross, et.al., "Reverse Engineering Tools For Ada," *Task 2, Phase 3 Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), December 1991, (CSE-91-19), 75 pages + Appendices.

14) J. H. Cross, et.al., "Reverse Engineering Tools For Ada," *Task 2, Phase 2 Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), August 1990, 78 pages + Appendices.

15) D. B. Brown, K. H. Chang, W. H. Carlisle, and J. H. Cross, "QUEST - Testing Tools For Ada," *Task 1, Phase 2 Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), August 1990, 85 pages + Appendices.

16) D. B. Brown, K. H. Chang, W. H. Carlisle, and J. H. Cross, "QUEST - Testing Tools For Ada," *Task 1, Phase 2 Six-Month Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), November 30, 1989, 58 pages + Appendices.

17) J. H. Cross, et.al., "Reverse Engineering Tools For Ada," *Task 2, Phase 2 Six-Month Report* of "The Development of a Program Analysis Environment for Ada," G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), December 1989, 51 pages + Appendices.

18) J. H. Cross, K. I. Morrison and C. H. May, "A Graphically Oriented Specification Language for Automatic Code Generation (GRASP - Phase I)," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-13, SUB 88-224), September 1989, 100 pages.

19) D. B. Brown, K. H. Chang, W. H. Carlisle, and J. H. Cross, "The Development of a Program Analysis Environment for Ada," *Final Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), June 1, 1989, 49 pages + Appendix.

20) J. H. Cross, K. I. Morrison and C. H. May, "A Graphically Oriented Specification Language for Automatic Code Generation (GRASP - Phase I)," *Semi-annual Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-13, SUB 88-224), December 1988, 77 pages.

21) D. B. Brown, K. H. Chang, W. H. Carlisle, and J. H. Cross, "The Development of a Program Analysis Environment for Ada," *Six-Month Report*, G. C. Marshall Space Flight Center, NASA/MSFC, AL 35821 (NASA-NCC8-14), November 30, 1988.

22) J. H. Chang, J. H. Cross, and S. Dannelly, "Software Safety For Flight Telerobotic Servicer (FTS)," Chapter 6, *Critical Issues in Robot-Human Operations During the Early Phases of the Space Station Program*, Final Report, Universities Space Research Association, December 1987. (NASA Grant NAG 5-939)

OTHER PUBLICATIONS

1) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 9, Spring 1995, Rev-1.

2) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 8, Winter 1995, Rev-1.

3) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 5/6, December 1993, Rev-1.

4) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 4, Rev-1.

5) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 3, January 1993, Rev-1.

6) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 2, April 1992, Rev-1.

7) J. H. Cross, "Message from the Chair," *Reverse Engineering Newsletter*, IEEE Computer Society, Technical Committee on Software Engineering, No. 1, January 1992, Rev-1.

8) J. H. Cross, et. al., "DoDDS Students Information Management System", *DS Manual*, Department of Defense Dependents Schools, June 1984.

9) J. H. Cross, et. al., "Educational Computing," *DS Manual*, Department of Defense Dependents Schools, January 1982.

2. RESEARCH CONTRACTS AND GRANTS

1) J. H. Cross (PI), “jGRASP Plugin for IntelliJ,” Auburn Cyber Research Center (ACRC), Internal Grant, October 2019 – September 2020, $124,357.

2) J. H. Cross (PI), “jGRASP Plugin for Eclipse,” Auburn Cyber Research Center (ACRC), Internal Grant, October 2018 – September 2019, $128,063.

3) J. H. Cross (PI), “jGRASP Plugin for Eclipse,” Auburn Cyber Research Center (ACRC), Internal Grant, October 2017 – September 2018, $111,064.

4) J. H. Cross (PI), Next-Gen Message Passing for Parallel Programming: Resiliency, Time-to-Solution, Performance-Portability, Scalability, and QoS, NSF AU Subaward (Anthony Skjellum, PI University of Tennessee, Chattanooga), 2017 – 2020, $74,890.

5) J. H. Cross (PI), T. D. Hendrix, and D. A. Umphress, "Increasing the Effectiveness and Utilization of Data Structure Visualizations in Undergraduate Computing," NSF/DUE, Phase 2, March 2010 – February 2012, $74,995.

6) J. H. Cross (PI) [25%], T. D. Hendrix, D. A. Umphress, N. H. Narayanan, "jGRASP: Toward Effortless Program Visualization with a Canvas of Dynamic Objects," NSF/DUE, Phase 2, September 2009 – August 2011, $250,000.

7) J. H. Cross (PI), T. D. Hendrix (Co-PI), and D. A. Umphress, "jGRASP: A framework for Integrating Visualizations of Software," NSF/CCLI-EMD, April 2005 – September 2009, $449,785.

8) D.A. Umphress (PI) and J. H. Cross, "Bringing Industry Practices in J2ME Development to an Undergraduate Wireless Engineering Curriculum, NSF, August 15, 2003 - August 14, 2005, $174,719.

9) J. H. Cross (PI), T. D. Hendrix, and K. H. Chang, "Scaleable Visualizations to Improve and Measure Comprehensibility of Software Systems: A Framework for Evaluation," NSF, June 16, 1998 - June 15, 2002, $845,000.

10) J. H. Cross (PI), T. D. Hendrix, and K. H. Chang, "Scaleable Visualizations to Improve and Measure Comprehensibility of Software Systems: A Framework for Implementation," College of Engineering Infrastructure Award, October 1, 1998 – September 30, 2003, $100,000.

11) J. H. Cross (PI) and K. H. Chang, "GRASP/Ada 95 - Methods and Tools," Marshall Space Flight Center, Huntsville, AL, March 1996 - September 1996, $30,000.

12) J. H. Cross (PI), "GRASP/Ada 95 Modification,", Defense Information Systems Agency, Center for Software (DISA/CFSW) under BAA 95-01, Category 3, November 9, 1995 - November 8, 1996, $58,803.

13) J. H. Cross (PI), "Migration to Ada 95 in CSE 422 - Introduction to Software Engineering, and CSE 522 - Software Engineering I, and CSE 622 - Software Engineering II," Defense Information Systems Agency, Center for Software (DISA/CFSW) under BAA 95-01, Category 2, November 9, 1995 - November 8, 1996, $63,995.

14) J. H. Cross (PI), "GRASP/Ada for Ada 9X," DoD AASERT Proposal, Advanced Research Projects Agency, July 15, 1995 - July 14, 1998, $74,000.

15) M. L. Gibson, W. Boulton, and J. H. Cross (Co-PI), "A Case Study Research Project On Implementing Organizational Reengineering Using the Xerox Business Architecture," Thomas Walter Center, Auburn University, AL, June 16, 1995 - June 15, 1996, $8,826.

16) J. H. Cross (PI), "Updating GRASP/Ada: Reverse Engineering Tools For Ada," Marshall Space Flight Center, Huntsville, AL, June 16, 1994 - June 15, 1995, $31,000.

17) J. H. Cross (PI), "Migration to Ada in CSE 422 (Introduction to Software Engineering) and CSE 522 (Software Engineering)," Advanced Research Projects Agency (ARPA) under BAA 93-26, Category 2, May 3, 1994 - October 2, 1995, $54,074.

18) J. H. Cross (PI) and T. M. Phillips, "Migration to Ada in CSE 200 (Fundamentals of Computer Science I) and CSE 220 (Fundamentals of Computer Science II)," Advanced Research Projects Agency (ARPA) under BAA 93-26, Category 2, May 3, 1994 - October 2, 1995, $69,273.

19) J. H. Cross (PI), "GRASP/Ada Modification for Ada 9X," Advanced Research Projects Agency (ARPA) under BAA 93-26, Category 3, May 3, 1994 - October 2, 1995, $45,805.

20) M. L. Gibson and J. H. Cross (Co-PI), "A Case Research Project On: Organizational Re-engineering Using Enterprise Modeling at Xerox Corporation," Thomas Walter Center, Auburn University, AL, March 29, 1994 - September 15, 1994, $11,000.

21) J. H. Cross (PI), "Updating GRASP/Ada: Reverse Engineering Tools For Ada," Marshall Space Flight Center, Huntsville, AL, June 16, 1993 - December 15, 1993, $31,000.

22) J. H. Cross (PI), "Updating GRASP/Ada: Reverse Engineering Tools For Ada," Marshall Space Flight Center, Huntsville, AL, July 1, 1992 - December 31, 1992, $25,000.

23) D. B. Brown and J. H. Cross (Co-PI), "The Development of a Program Analysis System for Ada (Phase 3)," Marshall Space Flight Center, Huntsville, AL, June 1, 1990 - September 30, 1991, $305,000.

24) D. B. Brown and J. H. Cross (Co-PI), "The Development of a Program Analysis System for Ada (Phase 2)," Marshall Space Flight Center, Huntsville, AL, June 1, 1989 - May 31, 1990, $299,996.

25) J. H. Cross (PI), "A Graphically-Oriented Specification Language For Automatic Code Generation," Marshall Space Flight Center, Huntsville, AL, June 1, 1988 - May 31, 1989, $113,000.

26) D.B. Brown and J. H. Cross (Co-PI), "The Development of a Program Analysis System for Ada," Marshall Space Flight Center, Huntsville, AL, June 1, 1988 - May 31, 1989, $109,891.

27) K. H. Chang (PI) and J. H. Cross, "Software and Human Robotic Safety," Universities Space Research Association, July 1, 1987 - December 31, 1987, $14,060.

SOFTWARE GRANTS

28) J. H. Cross (PI), "Software Engineering Educational Development Program," Grant-in-Kind, Rational Software Corporation, Santa Clara, CA, January 21, 1994, $1,550,160 (software).

29) J. H. Cross (PI), "ObjectMaker," Mark V Systems, Encino, CA, July 9, 1993, $30,000 (software).

30) J. H. Cross (PI), "Excelerator Educational Grant," Index Technology Corporation, Cambridge, MA, August 22, 1989, $170,000 (software).

31) J. H. Cross (PI), "HTI-001 University Grant," Hamilton Technologies Inc., Cambridge, MA, July 15, 1988, $42,000 (software and training).

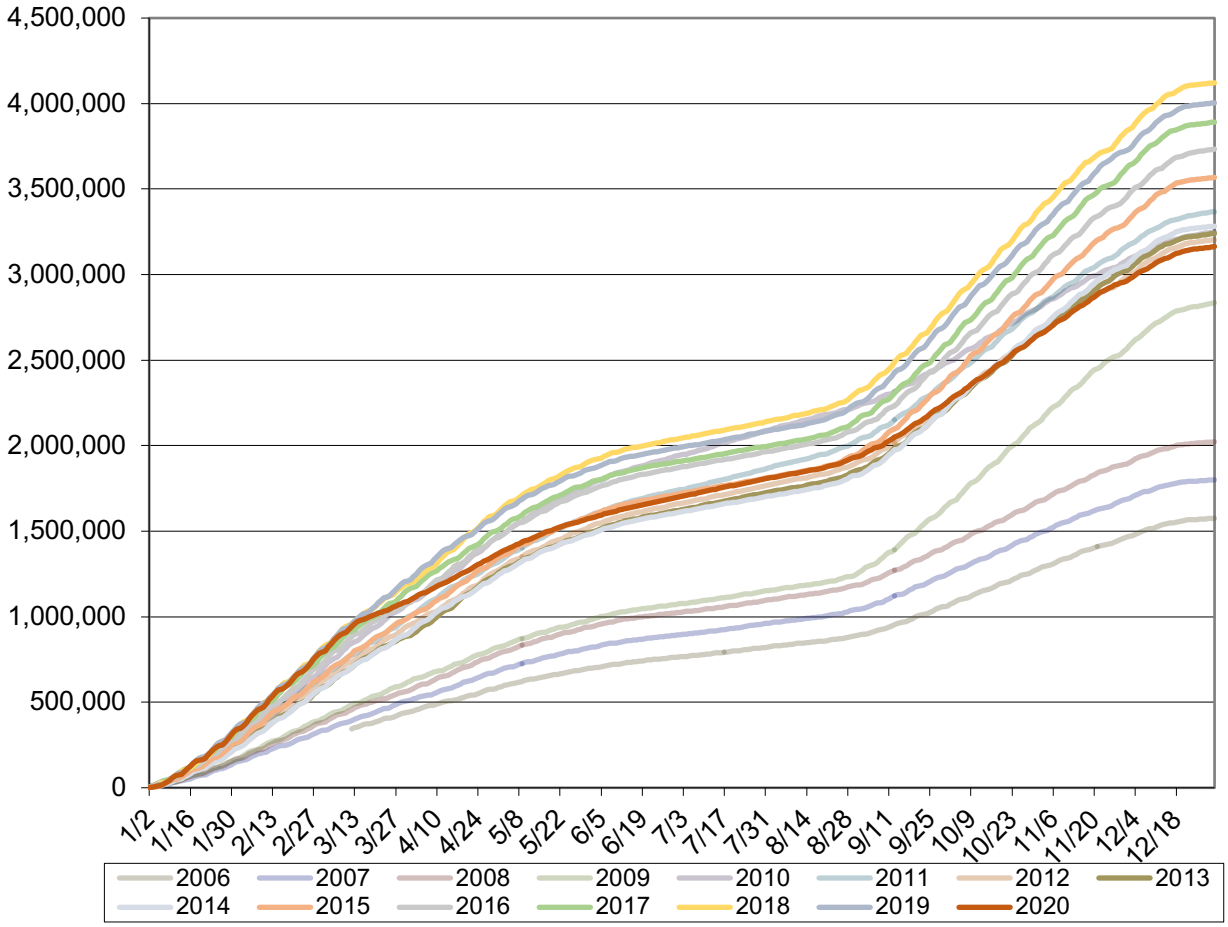
32) J. H. Cross (PI), "Excelerator Educational Grant," Index Technology Corporation, Cambridge, MA, January 1, 1987, $51,000 (software).

3. DESCRIPTION OF SCHOLARLY PROGRAM

My research program has focused on the development of software tools which can provide leverage for practicing software professionals as well as students on the way to becoming professionals. My own experience as a professional software developer, prior to pursuing a Ph.D. and entering academia, made an important and lasting impression regarding the need for research to improve the techniques and methods used by software engineers. My primary objective continues to be the creation and automatic generation of visualizations of software at various levels of abstractions including detailed (or algorithmic) design and architectural design, which we have implemented in jGRASP (see below). My early focus was on an algorithmic visualization called the Control Structure Diagram aimed at improving comprehensibility of the source code. During the past few years, dynamic (or run time) visualizations have been the target of my research group. We have made some exciting contributions thus far with our dynamic object viewers (see below), but we have only scratched the surface with respect to the potential for this line of research. We have benefited from excellent support from outside funding agencies (most recently NSF), and we continue to seek additional extramural funding for this research.

jGRASP (Java-based Graphical Representations for Structures, Algorithms, and Processes) - My research group has developed the jGRASP Integrated Development Environment (IDE) specifically to provide automatic generation of software visualizations to improve the comprehensibility of software. jGRASP is implemented in Java, and it runs on all platforms with a Java Virtual Machine (Java version 1.5 or higher). jGRASP produces Control Structure Diagrams (CSDs) for Java, C, C++, Objective-C, Python, Ada, and VHDL; Complexity Profile Graphs (CPGs) for Java and Ada; UML class diagrams for Java; and has dynamic object viewers and a viewer canvas that work in conjunction with an integrated debugger, workbench, and interactions feature for Java. The viewers include a data structure identifier mechanism which recognizes objects that represent traditional data structures such as stacks, queues, linked lists, binary trees, and hash tables, and then displays them in an intuitive textbook-like presentation view. jGRASP can be used in forward engineering mode to design and implement software (edit, compile, run, and debug) as well as in a reverse engineering mode when attempting to understand existing software. Since most software systems are rarely written from scratch, the combination of support for forward and reverse engineering has been important to the success of jGRASP as it continues to evolve. The program visualization capabilities in jGRASP are quite unique among IDEs. For more information, see the tutorials at the jGRASP web site (http://www.jgrasp.org).

Impact of the jGRASP Project – In an effort to measure the impact of jGRASP, in 2006 we began logging version checks, which allow users to automatically update their installed version. These version checks occur at most once a day when jGRASP is being used. By accessing publicly available databases, we are able to look up organizations and/or locations based on the IP addresses contained in our daily logs. Analysis of this data provides us with a clear picture of where and by what entity jGRASP is used on a daily basis. For example, during the academic year (AY) 2019-2020, we had over 1000 institutions with at least one version check and over 400 institutions (http://www.jgrasp.org/schools.html) with at least 100 checks for updates. Most of our checks for updates do not come from campus IP addresses, although many are from near campuses. We assume most of our users are students, but these off-campus version checks are not included with institutions counts. The chart below shows the cumulative version checks plotted by year (Jan-Dec rather than AY) for 2006 through 2020. In each year since 2010, jGRASP has logged over 3 million version checks, and in 2018 and 2019, version checks exceeded 4 million. In 2020, the year of the COVID-19 pandemic, version checks dropped to just over 3 million. The 2020 plot — in the graph clearly shows the immediate decline in version checks beginning in mid-March 2020, which is when most academic institutions closed campuses for in-person classes/labs.



jGRASP cumulative uses (version checks) shown for years 2006-2020. During the period 2010-2020, the cumulative uses exceeded 3 million per year.

Future Directions for the jGRASP Project – We are continuing to round out the support for Java by adding a jGRASP plugins for Eclipse and IntelliJ, which provide support for the jGRASP viewers and viewer canvas in their respective Java debuggers. An alpha version of the plugin for Eclipse was made available in October 2018 to collect initial feedback for users. A beta version with additional features is planned for release in February 2019. Beyond this, we plan to build plugins for additional IDEs. Our current focus is extending jGRASP to include the dynamic viewers and viewer canvas for C/C++ and Python. This will be followed by jGRASP plugins for Eclipse and CLion, which will provide support for the jGRASP viewers and viewer canvas in their respective C/C++ debuggers. This is expected to open up additional research opportunities in the area of computer security with a focus on program visualization and reverse engineering of malware.

C. EXTENSION, CONTINUING EDUCATION, AND PUBLIC SERVICE ACTIVITIES

1. EXTENSION – WORKSHOPS AND SHORT COURSES

(The workshops listed in this section are also listed in the research section under Abstracts/Presentations since they are a dissemination of our research.)

1) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at APSI CSP Workshop for High School Teachers (Auburn University, AL, July 11, 2018).

2) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at WeTeach_CS Summit 2018, for High School Teachers, organized/hosted by the University of Texas at Austin (Georgetown, TX, June 18-20, 2018).

3) J. H. Cross, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at WeTeach_CS Summit 2017, for High School Teachers, organized/hosted by the University of Texas at Austin (Austin, TX, June 5-7, 2017).

4) J. H. Cross and T. D. Hendrix, "jGRASP - An IDE with Software Visualizations for Program Understanding," presentation at APSI CSP Workshop for High School Teachers (Auburn University, AL, June 28, 2016).

5) J. H. Cross and T. D. Hendrix, "jGRASP - An IDE with Software Visualizations for Program Understanding," Workshop at CSTA-Alabama Meeting (CS High School Teachers) (Tuscaloosa, AL, June 22, 2015).

6) J. H. Cross, T. D. Hendrix, and D. A. Umphress, "Dynamic Program Visualizations for Java," Workshop at SIGCSE 2014 (Atlanta, GA, March 8, 2014).

7) J. H. Cross, J., "Using the New jGRASP Canvas of Dynamic Viewers for Program Understanding and Debugging in Java Courses," Tutorial at CCSE Midwest Conference (University of Findlay, Findlay, OH), September 20, 2013.

8) J. H. Cross, "jGRASP: "Using the New jGRASP Canvas of Dynamic Viewers for Program Understanding and Debugging in Java," Tutorial at CCSC Southeast Conference (Spelman College, Atlanta, GA, November 12-13, 2010).

9) J. H. Cross, "jGRASP: An Integrated Development Environment with Intuitive Visualizations for Teaching Hard Concepts in Java," Tutorial at CCSC Southeast Conference (Spelman College, Atlanta, GA, November 12-13, 2010).

10) J. H. Cross, "jGRASP: An Integrated Development Environment with Intuitive Visualizations for Teaching Hard Concepts in Java," Pre-Conference Workshop at CCSC Central Plains Conference (Parkville, MO, April 9-10, 2010).

11) J. H. Cross, "jGRASP: Teaching Hard Concepts with Intuitive Visualizations," Tutorial at Virginia Community College System IST Peer Group Conference (Abingdon, VA, CO, November 13-14, 2008).

12) J. H. Cross, "jGRASP: Teaching Hard Concepts with Intuitive Visualizations," Tutorial at CCSC Rocky Mountain Conference (Colorado Springs, CO, October 17-18, 2008).

13) J. H. Cross, "jGRASP: Intuitive Visualizations for Understanding Software," Invited presentation, Troy Montgomery (Montgomery, AL., April 29, 2008).

14) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Tutorial at Tuskegee University (Tuskegee, AL, February 14, 2008).

15) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Tutorial at CCSC-Southeast 2007 (Myrtle Beach, SC, November 2-3, 2007).

16) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at CCSC-East 2007 (St. Joseph College, Patchogue, Long Island, NY, October 10-11, 2007).

17) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at CCSC-Midwest 2007 (Miami University – Hamilton, OH, September 28-29, 2007).

18) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at FIE 2006 (San Diego, CA, October 28, 2006).

19) J. H. Cross, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at CCSC-SC 2006 (Hunstville, TX, April 21, 2006).

20) J. H. Cross, T. D. Hendrix, and D. A. Umphress, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at SIGCSE 2006 (Houston, TX, March 1, 2006).

21) J. H. Cross and D. A. Umphress, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at FIE 2004 (Savannah GA, October 20, 2004).

22) J. H. Cross, T. D. Hendrix, and D. A. Umphress, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at SIGCSE 2004 (Norfolk, VA, March 3, 2004).

23) J. H. Cross and T. D. Hendrix, "jGRASP: An Integrated Development Environment with Visualizations for Teaching Java in CS1, CS2, and Beyond," Workshop at SIGCSE 2003 (Reno, Nevada, February 21, 2003).

24) J. H. Cross, "Introduction to Software Engineering," at Gunter AFB through AUM, June 1991. (15 students)

25) J. H. Cross, "Software Design Methodology," Software Engineering Workshop (December 4, 1987), Northeast Louisiana University, Monroe, Louisiana.

2. ONLINE UNDERGRADUATE AND GRADUATE COURSES – AUBURN ONLINE PROGRAM

CPSC 1213-AO1 Introduction to Computer Science I, Spring 2021, 55 students.

CPSC 1223-AO2 Introduction to Computer Science II, Spring 2021, 43 students.

CPSC 1213-AO1 Introduction to Computer Science I, Fall 2020, 46 students.

CPSC 1223-AO1 Introduction to Computer Science II, Fall 2020, 33 students.

CPSC 1223-AO2 Introduction to Computer Science II, Fall 2020, 39 students.

CPSC 1213-AO1 Introduction to Computer Science I, Summer 2020, 48 students.

CPSC 1213-AO1 Introduction to Computer Science I, Spring 2020, 60 students.

CPSC 1223-AO2 Introduction to Computer Science II, Spring 2020, 55 students.

CPSC 1213-AO1 Introduction to Computer Science I, Fall 2019, 48 students.

CPSC 1223-AO1 Introduction to Computer Science II, Fall 2019, 31 students.

CPSC 1223-AO2 Introduction to Computer Science II, Fall 2019, 42 students.

CPSC 1213-AO1 Introduction to Computer Science I, Summer 2019, 40 students.

CPSC 1213-AO1 Introduction to Computer Science I, Spring 2019, 46 students.

CPSC 1223-AO2 Introduction to Computer Science II, Spring 2019, 40 students.

CPSC 1213-AO1 Introduction to Computer Science I, Fall 2018, 67 students.

CPSC 1223-AO1 Introduction to Computer Science II, Fall 2018, 38 students.

CPSC 1223-AO2 Introduction to Computer Science II, Fall 2018, 49 students.

CPSC 1213-AO1 Introduction to Computer Science I, Summer 2018, 62 students.

CPSC 1213-AO1 Introduction to Computer Science I, Spring 2018, 27 students.

CPSC 1223-AO2 Introduction to Computer Science II, Spring 2018, 22 students.

COMP 6716 Software Quality Assurance, Spring 2017, 8 students.

COMP 6716 Software Quality Assurance, Spring 2016, 3 students.

COMP 6716 Software Quality Assurance, Spring 2014, 4 students.

COMP 6716 Software Quality Assurance, Spring 2012, 10 students.

COMP 6716 Software Quality Assurance, Spring 2010, 3 students.

CSE 522 Software Engineering I, Winter 1996, 3 students.

CSE 625 Software Engineering Environments, Fall 1995, 10 students.

CSE 522 Software Engineering I, Winter 1995, 7 students.

CSE 622 Software Engineering II, Spring 1994, 13 students.

CSE 522 Software Engineering I, Winter 1994, 8 students.

CSE 522 Software Engineering I, Winter 1993, 6 students.

CSE 625 Software Engineering Environments, Fall 1992, 4 students.

CSE 622 Software Engineering II, Summer 1992, 8 students.

CSE 522 Software Engineering I, Winter 1992, 8 students.

CSE 625 Software Engineering Environments, Fall 1991, 8 students.

3. jGRASP CONSULTING (Free)

Provide ongoing assistance to jGRASP users, including professionals, university/college and high school educators, and students. Most assistance is handled via email, 1998-present.

D. UNIVERSITY SERVICE ACTIVITIES

1. UNIVERSITY SERVICE

Departmental, College, and University Service Work.

DEPARTMENT

1) Undergraduate Recruitment Committee, chair, August 2006 – present.
2) Faculty Search Committee, member, August 2006 – present.
3) Graduate Committee, *ex officio* member as Department Chair, July 1996 to August 2006.
4) Undergraduate Committee, *ex officio* member as Department Chair, July 1996 to August 2006; member to present.
5) Equipment Planning Committee, ex officio member as Department Chair, July 1996 to August 2006.
6) Tenure and Promotion, ex officio member as Department Chair, July 1996 to August 2006; member to present.
7) Faculty Recruitment, ex officio member as Department Chair, July 1996 to August 2006; member to present.
8) Peer Evaluation, ex officio member as Department Chair, July 1996 to August 2006.
9) Strategic Planning, *ex officio* member as Department Chair, July 1996 to August 2006.
10) Equipment Planning Committee Chair, September 1994 to July 1996.
11) Faculty Search Committee Chair, Computer Science and Engineering, September 1992 to July 1996.
12) Faculty Search Committee Member, Computer Science and Engineering, August 1987 to June 1988, September 1991 to August 1992.
13) Co-Chair (with C. McCreary and H. Carlisle), Minority Introduction To Engineering (MITE), 1990.

14) Member, Computer Engineer Search Committee, July 1990 to August 1990.

15) Chairman, Instructor Search Committee, February 1990 to August 1990.

16) Curriculum Committee Member, September 1986 to July 1996.

17) Textbook Committee Chairman, September 1986 to 1996.

18) Equipment Planning Committee Member, September 1988 to August 1991.

COLLEGE

19) College of Engineering, Engineering Faculty Council, 2010 (filled in for Drew Hamilton at Tenure and Promotion Meetings), August 2013 to present.

20) Information Technology Priority Committee, Co-Chair, January 1999 to 2004.

21) Engineering Strategic Planning Committee Member, March 1994 to July 1996.

22) Engineering Extension and Outreach Committee Member, July 1992 to August 1995.

23) Engineering Faculty Council, January 1992 to July 1996.

24) Engineering Research Council, October 1991 to August 1994.

25) Department Head Search Committee Member, Computer Science and Engineering, August 1987 to September 1990.

26) President's Award Committee Member, August 1987 to August 1995.

UNIVERSITY/SENATE

27) Academic Computing Committee (ACC), August 2010 to July 2013; ACC Chair in 2013

28) University Building Committee, Transportation Technology Center (Shelby Engineering Center), August 2001- December 2007.

29) University Information Technology Advisory Committee (UITAC), April 1998 to 2001.

30) Chief Information Officer Search Committee Member, August 1996 to June 1997.

31) Administrative Liaison for Auburn University as an Academic Affiliate of the Software Engineering Institute at Carnegie Mellon University, Pittsburgh, PA, 1989-1993; Liaison for SEI Subscriber's Program.

32) Faculty Senator, Computer Science and Engineering, September 1987 to June 1990.

33) Faculty Advisor, Auburn University Table Tennis Club, September 1987 to present.

2. PROFESSIONAL SERVICE

Senior Member, Institute of Electrical and Electronic Engineers (IEEE)

Computer Society
Technical Council on Software Engineering

Distinguished Member, Association for Computing Machinery (ACM)

ACM Special Interest Groups: Software Engineering (**SIGSoft**), Ada (**SIGAda**), Programming Languages (**SIGPLAN**), Computer Science Education (**SIGCSE**)

NATIONAL / INTERNATIONAL ACTIVITIES

Exhibitor, **SIGCSE Technical Symposia,** 2003 – 2018.

Member, ACM Java Task Force, Jan 2004 - Sep 2006.

Member, ACM and IEEE/Computer Society Joint Task Force for Computing Curricula 2005, 2002-2005 (Overview Report, September 30, 2005).

Co-Chair, IEEE Computer Society and ACM Joint Task Force for Computing Curricula 2001, 1999-2001 (Computer Science Volume, December 15, 2001)

Member, Board of Directors, CSAB, 1999-2005**.**

Member, Program Evaluator and Program Criteria Committee (PEPC), CSAB, 2000-2003.

Vice President for Chapter Activities, IEEE/Computer Society, 2001 - 2002.

Vice President for Educational Activities, IEEE/Computer Society, 1999 - 2000.

Member, Board of Governors, IEEE/Computer Society, 1998 - 2000.

Vice-Chair, Technical Activities Board, IEEE/Computer Society, 1998.

Member, Press Activities Board, IEEE/Computer Society, 1998.

Ombudsman, IEEE/Computer Society, 1998.

Secretary, IEEE/Computer Society Technical Council on Software Engineering, January 1996 to 1998.

Member, Program Committee, COMPSAC 2012(and **Track Co-Chair**, *Education and Learning*)

Member, Program Committee, COMPSAC 2011(and **Track Co-Chair**, *Education and Learning*)

Member, Program Committee, COMPSAC 2010.

Member, Program Committee, COMPSAC 2009.

Member, Program Committee, COMPSAC 2008.

Member, Program Committee, COMPSAC 2007.

Member, Program Committee, COMPSAC 2006.

Member, Program Committee, ACM SIGAda Symposium'98, Washington, DC.

Member, Program Committee, Fifth Working Conference on Reverse Engineering, October 12-14, 1998, Honolulu, HI.

Member, Program Committee, 6th Reengineering Forum, March 9-11, 1998, Florence, Italy.

Member, Program Committee, Second Euromicro Working Conference on Software Maintenance and Reengineering, March 9-11, 1998, Florence, Italy.

Member, Program Committee, Fourth Working Conference on Reverse Engineering, October 6-8, 1997, Amsterdam, Netherlands.

Program Co-Chair for Academia, Tri-Ada'96, December 3-7, 1996, Philadelphia, PA.

Member, Program Committee, International Conference on Software Maintenance, November 4-8, 1996, Monterey, CA.

Member, Program Committee, Third Working Conference on Reverse Engineering, November 4-8, 1996, Monterey, CA.

Member, Program Committee, Second Working Conference on Reverse Engineering, July 14-16, 1995, Toronto.

Vice-Chair, Fourth Reengineering Forum, September 19-21, 1994, Victoria, BC.

Member, Program Committee, International Conference on Software Maintenance, September 21-23, 1994, Victoria, BC.

Member, Program Committee, 4th Reengineering Forum, September 19-21, 1994, Victoria, BC.

Chair, Reverse Engineering Committee, IEEE/Computer Society Technical Council on Software Engineering, April 1991 to December 1995.

Member, Reuse Committee, IEEE/Computer Society Technical Council on Software Engineering, 1992 to present.

Member, Education Committee, IEEE/Computer Society Technical Council on Software Engineering, 1992 to present.

Member, Operating Committee, IEEE/Computer Society Technical Council on Software Engineering, April 1991 to present.

Member, Executive Committee, IEEE/Computer Society Technical Council on Software Engineering, April 1990 to present.

Member, Program Committee, Working Conference on Reverse Engineering, May 21-23, 1993, Baltimore, MD.

Secretary, Publications Board, IEEE/Computer Society, March 1989 - February 1991.

Vice-Chair, 3rd Reverse Engineering Forum, September 15-17, 1992, Burlington, MA.

Member, SIGAda ASISWG, Ada Semantic Interface Specification Working Group, May 1993 to present.

Member, ACM Lectureship Committee, 1991 to 1992.

Member, Editorial Panel, *Information and Technology*, 1989 to 2005.

Reviewer - *IEEE Software*

Reviewer - *IEEE Transactions on Software Engineering*

Reviewer - *International Journal of Software Engineering and Knowledge Engineering*

Reviewer - *Annals of Software Engineering*

Reviewer - National Science Foundation

Referee - 1991 Computer Science Conference

Reviewer - Manuscripts for Benjamin Cummings.

Reviewer - Manuscripts for McGraw-Hill

Reviewer – ACM SIGCSE

Reviewer – ACM ITiCSE

REGIONAL ACTIVITIES

General Chair, 46th ACM Southeast Conference, Auburn, AL, March 28-29, 2008.

Member, Advisory Board, Computer Science and Engineering, Mississippi State University, Sep 2002 – present.

Program Co-Chair, 34th ACM Southeastern Regional Conference, Tuskeegee, AL, April 18-19, 1996

Software Engineering Session Chair, 32nd ACM Southeastern Regional Conference, Tuscaloosa, AL, March 17-18, 1994.

Referee, 32nd ACM Southeast Conference, Tuscaloosa, AL, March 17-18, 1994.

Judge, Student Paper Competition, 31st ACM Southeast Conf., Birmingham, AL, April 15-16, 1993.

Referee, 31st ACM Southeast Conference, Birmingham, AL, April 15-16, 1993.

Software Engineering Session Chair, 30th ACM Southeastern Regional Conference, Raleigh, North Carolina, April 8-10, 1992.

Referee, 30th ACM Southeastern Regional Conference, Raleigh, North Carolina, April 8-10, 1992.

Chair, Steering Committee, ACM Southeast Regional Conference, April 1991 - April 1992.

Member, Steering Committee, ACM Southeast Regional Conference, February 1991 to present.

General Chair, 29th ACM Southeast Conference, Auburn, AL, April 10-12, 1991.

Programming Languages Session Chair, 28th ACM Southeastern Regional Conference, Greenville, South Carolina, April 18-20, 1990.

Invited Panelist, 28th ACM Southeast Regional Conference, Greenville, SC, April 18-20, 1990.

Software Engineering Session Chair, 27th ACM Southeast Regional Conf., Atlanta, GA, April 1989.

Program Chair, 26th ACM Southeastern Regional Conference, Mobile, AL, April 1988.