

David A. Sykes

CURRICULUM VITAE

PERSONAL DATA

Larry Hearn McCalla Professor
Department of Computer Science
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EDUCATION

Ph.D., Computer Science, Clemson University, 1995. Advisor: D.E. Stevenson, Ph. D. Dissertation:
Objectculture: Achieving Efficient Implementations and Effective Interactions in Object-Oriented Programs.

M.A., Computer Sciences, University of Texas at Austin, 1975. Advisor: Laurent Siklössy, Ph. D. Thesis:
SPOT: A System for Automatic Program Synthesis.

B.S., Computer Science, Purdue University, 1972.

Diploma, St. Xavier High School (Louisville, KY), 1969.

TEACHING AREA SPECIALTIES

Computer programming, software engineering, programming languages, database, Web programing, and compilers.

TEACHING EXPERIENCE

Professor, Computer Science, Wofford College, Spartanburg, SCSeptember 2001-Present.

COSC 101 *Introduction to Computers*, COSC 115 *Introduction to Web Authoring*, COSC 235 *Programming and Problem Solving*, COSC 330 *Introduction to Databases*, COSC 335 *Advanced Web Programming*, COSC 340 *Theory of Computation*, COSC 350 *Data Structures*, COSC 351 *Advanced Data Structures*, COSC 360 *Operating Systems*, COSC 410 *Software Engineering*, COSC 420 *Compilers*, and COSC 480 *Special Topics*.

Assistant Professor, Computer Science, Furman University, Greenville, SC.....September 1999-August 2001

CS 11 *Introduction to Computer Science I*, CS 16 *Introduction to Computing*, CS 21 *Topics in Programming*, CS 35 *Software Design*, and CS 41 *Systems Analysis*.

Assistant Professor, Computer Science, Winthrop University, Rock Hill, SC.....August 1997-May 1999

CSCI 208 *Introduction to Computer Science II*, CSCI 481 *Special Topics in Computer Science: Artificial Intelligence*, CSCI 461 *Translator Construction*, CSCI 475 *Software Engineering I*, and CSCI 101 *Introduction to Computers and Information Processing*.

Assistant Professor, Computer Science, Middle Tennessee State University, Murfreesboro, TNAugust 1996-May 1997

CSCI 321 *Theory of Programming Languages*, CSCI 460/560 *Special Topics: Object-Oriented Analysis and Design*, CSCI 619 *Theory of Compilers*, CSCI 416/516 *Compiler Analysis and Design*, CSCI 456/556 *Database Management Systems*, CSCI 303U *Programming Languages: UNIX Shell Programming*, and CSCI 315I *Technology Tools: The Internet*.

INDUSTRY EXPERIENCE

Self-Employed 1991–2001

Provided consulting and training services in object-oriented analysis and design concepts, project management, design patterns, C++ programming, and testing. Developed and conducted custom workshops tailored to needs of software developers at Lucent Technologies, Whippany, NJ.

SofTech, Inc., Systems Sciences Group, Fairborn, Ohio 1982–1991

Systems Consultant. Reviewed independent contributions to the Ada Compiler Validation Capability (ACVC). Served as program manager for a five-year, \$10,000,000 contract with the United States Air Force to provide technical services to establish and maintain Ada and JOVIAL J73 as standard programming languages. Defined operational procedures for validating Ada compilers. Developed tests for the ACVC. Validated Ada and JOVIAL J73 compilers. Trained personnel in other Ada Validation Facilities.

Supervised the maintenance of the ACVC and the JOVIAL Compiler Validation System (JCVS). Authored a workbook about tasking for an Ada training curriculum. Member of a team responsible for designing and implementing two intermediate phases of an Ada compiler. Investigated the use of Ada tasking in avionics software to replace or implement cyclic executives. Served as a deputy manager of the Systems Software Group, responsible for annual reviews of some department personnel.

Structural Dynamics Research Corporation, Milford, Ohio 1982

Software Development Engineer. Designed and implemented portions of an Oracle-based system to track and control digital and hardcopy engineering documents. Developed a library for a device-independent menu-based user interface. Developed a forms interface to a project management package.

SofTech, Inc., Federal Systems Group, San Diego, California 1977–1982

Systems Consultant. Designed a preprocessor to extend COBOL with DL/I, a language supporting a high-level interface to the IBM Information Management System (IMS) data base product.

Senior Software Engineer. Developed tests for the ACVC. Designed and implemented a code generator and a peephole optimizer for a JOVIAL J73 compiler.

Software Engineer. Designed and implemented a global optimizer for a PLEXUS compiler. Created a Structured Analysis and Design Technique (SADT) model of current manufacturing operations and requirements for future manufacturing operations at Northrop. Designed and implemented tools to interface the IMAGE database management system and a forms management language within COBOL programs. Evaluated the quality of code generated by two JOVIAL (J3B) compilers. Identified requirements for, designed, and implemented portions of the Field Office Reporting System (FORS) for the United States Department of Energy.

NCR Corporation, Data Systems Division, San Diego, California 1975–1977

Associate Programmer. Created a functional specification for a linkage editor. Designed and implemented the code generator phase of a compiler for NCR's systems programming language. Contributed to the design of the machine instruction set architecture for a new line of processors. Implemented a simple line-oriented text editor for patching executable images. Implemented a loader.

WORKSHOPS

Small or Liberal Arts Colleges Adapting to CS2013: Making It Work, SIGCSE 2015 Workshop, March 26, 2015.

Student Engagement: The View from Their Seats, 11th Annual Teaching and Learning Conference, Elon University, August 14, 2014.

LittleFe Buildout Event, SIGCSE 2013 Workshop, March 8 and 9, 2013.

Teaching, Learning & Assessing in Traditional & Non-Traditional Settings, 9th Annual Teaching and Learning Conference, Elon University, August 16, 2012.

Thresholds to Learning, 8th Annual Teaching and Learning Conference, Elon University, August 18, 2011.

Creating Mobile Phone Applications with App Inventor for Android, SIGCSE 2010 Symposium, March 12, 2010.

Using Writing in Your Courses, Wofford College, May 21, 2009.

Introducing Bioinformatics Algorithms in Computer Science Courses, SIGCSE 2009 Symposium, March 6, 2009.

Multimedia Projects in Python for Introductory CS Courses, SIGCSE 2008 Symposium, March 12, 2008.

2007 Day of Science, United States Department of Energy, Oak Ridge National Laboratory, Knoxville, TN, October 28-29, 2007.

A Hands-on Exploration of Educational Robotics, SIGCSE 2007 Symposium, March 9, 2007.

National Computational Science Institute Second Look Workshop, High Point University, July 13-19, 2003.

Share Your Cool Stuff Workshop, Wofford College, May 19-23, 2003.

National Computational Science Institute First Look Workshop, High Point University, February 28-March 1, 2003.

Using LEGO Mindstorms Across the Computer Science Curriculum, SIGCSE 2002 Workshop, March 1, 2002.

PUBLICATIONS

J. D. McGregor and D. A. Sykes. *A Practical Guide to Testing Object-Oriented Software*, Addison Wesley, 2001.

A. R. Shealy, B. A. Malloy, and D. A. Sykes. "SIMx86: An Extensible Simulator for the Intel1 80x86 Processor Family." In Proceedings of the 30th Annual Simulation Symposium, April 7-9, 1997, Atlanta GA, pages 157-166.

D. A. Sykes and B. A. Malloy. "The Design of an Efficient Simulator for the Pentium Pro Processor." In Proceedings of 1996 Winter Simulation Conference, pp. 840-847, December 8-11, 1996, Coronado, CA.

J. T. Douglass, D. A. Gupta, B. A. Malloy, and D. A. Sykes. "An Efficient, Extensible Design of a PCS Network Simulation." In Proceedings of Object-Oriented Simulation Conference, pp. 109-114, January 14-17, 1996, La Jolla, CA.

D. A. Sykes. "Culturing Objects to Achieve Efficient Implementations and Entity Interactions in Object-Oriented Programming." In Proceedings of the 33rd Annual Southeast Conference, pp. 64-72, March 17-18, 1995.

J. D. McGregor and D. A. Sykes. *Object-Oriented Software Development: Engineering Software for Reuse*, International Thomson Computer Press, 1992.

J. D. McGregor and D. A. Sykes. "Object-Oriented: A Paradigm for Reuse." *American Programmer*, vol. 4, no. 10 (October 1991).

D. A. Sykes and J. D. McGregor. "Object-Oriented Modeling in the Apparel Industry." *TOOLS USA '91*, Prentice Hall, 1991.

D. A. Sykes. "On Distributing Linked Lists." In Proceedings of the Fifth Distributed Memory Computing Conference, Volume II, 1990.

L. Siklössy and D. A. Sykes. "Automatic Program Synthesis from Example Problems." In Proceedings of the 4th International Joint Conference on Artificial Intelligence, 1975.

PRESENTATIONS

"Just take those old records off the shelf..." Spartanburg IBM PC User's Group, May 16, 2002.

"*The Real World* According to DS," Furman University Student Chapter of the ACM, January 17, 2002.

"Object-Oriented Design Patterns," Winthrop University Student Chapter of the ACM, October 1998.

“Objectculture: Achieving Efficient Implementations and Effective Interactions in Object-Oriented Programs,” Computer Science Department, Middle Tennessee State University, March 27, 1996.

“Object-Oriented Analysis and Design Concepts,” Professional Development Seminar sponsored by The Greater Dayton Chapter of the Association for Computing Machinery, April 30, 1994.

Lectures in Object-Oriented Programming, Summer Science Program, South Carolina Governor’s School for Science and Mathematics, July 29–30, 1991.

“Pinning and Cutting Resource Planning Using Object-Oriented Simulation,” Advanced Apparel Manufacturing Technology Conference, Pendleton, SC, February 11, 1991.

PROFESSIONAL ACTIVITIES

Member, Association for Computing Machinery (ACM), 1974–present.

Member, ACM Special Interest Group for Computer Science Education (SIGCSE).

Paper reviewer for Consortium for Computer Science in Colleges Southeast Conference (CCSC:SE) since 2003.

Judge, CCSC:SE Programming Contest since 2002.

Faculty consultant, McCracken Middle School Eagles First Lego League Robotics Program, 2012.

Judge, ACM Southeast USA Regional Intercollegiate Programming Contest, 2004–2007.

Member of the Board, Consortium for Computer Science in Colleges (CCSC, formerly Consortium for Computing in Small Colleges), 2003–2006.

Co-Conference Chair with Joseph D. Sloan, CCSC Southeast Regional Conference, November 5–6, 2004.

Faculty Sponsor and Programming Team Coach, Wofford College Student Chapter of the ACM, 2001–present.

Judge, Piedmont Region III Science Fair, University of South Carolina at Spartanburg, 2002, 2004, 2006, 2008, 2010, 2012.

Advisor, Upsilon Pi Epsilon Honor Society, Furman University Chapter, 2000–2001.

Winthrop University Student Programming Team, Interim Coach, 1997.

Session Chair, CCSC Southeastern Conference, November 7–8, 2003.

Paper Reviewer, SIGCSE 2003, 2004, 2005, 2006; CCSC 2000, 2003, 2004, 2005, 2006, 2007, 2008.

HONORS AND AWARDS

Upsilon Pi Epsilon (UPE) National Computer Science Honorary Society.

SPONSORED RESEARCH

J. D. McGregor and D. A. Sykes. *Tools and Processes for the Evolution of Assets in a Software Product Line*. South Carolina Space Grant/South Carolina EPSCoR Program. One year, \$29,956 (\$7,855 subcontract from Clemson University).

D. A. Sykes, H. S. Porter and D. Price. *Percolator: A Tool for Learning about Java Programs*. Funded by Furman Advantage Program and Andrew W. Mellon Foundation under grant *Implementing Cost-Effective Strategies for the Widespread Application of Information Technology at Furman University and Wofford College*. Summer 2001.

D. A. Sykes and A. Etherington. *Reusing Test Cases for Testing Software Based on Design Patterns*. Funded by Furman Advantage Program, Summer 2000.

D. A. Sykes. *Object-Oriented Modeling in the Apparel Industry*. Sponsored by Clemson Apparel Research, funded by Defense Logistics Agency under Contract Number DLA900-87-D-0017 (DO 0019).

STUDENT RESEARCH

WOFFORD COLLEGE

September 2012 to June 2013. Arthur Vining Davis Foundation *High Impact Fellows* grant, collaborating with Caroline Odell to develop an iOS app to feature the poetry of James Dickey. We are also collaborating with John Lane, Deno Trakas, and Ed Epp.

January 2012. Collaborated with Cody Chesneau to find a way to implement an interactive children's book that incorporated sliding picture puzzles as an iOS app.

January 2011. Collaborated with Glenn Hope and Jesse Hanley to develop software to assist the Southern Conference with scheduling basketball games.

March 2004. Collaborating with Jonathan DeBusk and David Harmon on *Tools and Processes for the Evolution of Assets in a Software Product Line*. South Carolina Space Grant/South Carolina EPSCoR Program. This work involves developing software tool support for a notation being refined at Clemson University and modeling common features and variabilities in mission control software.

FURMAN UNIVERSITY

Summer 2002. Collaborated with David Price, a senior majoring in computer science, on *Percolator: a Tool for Learning about Java Programs*, funded by Furman Advantage Program and Andrew W. Mellon Foundation. Investigation of software to use graphics to animate a running Java program. Mr. Price described this work as his senior thesis completed in spring 2002.

Summer 2001. Collaborated with Adam Etherington, senior computer science major, in developing test harnesses for testing software interactions based on behavioral design patterns.

MIDDLE TENNESSEE STATE UNIVERSITY

Chair, Master's Committee for Randy Jones. Title of presentation: *Object REXX: An Overview*. May 1997.

Member, Master's Committee for Yuhua Cai. Title of presentation: *Approaches to Testing Object-Oriented Software*. April 1997.

SERVICE

WOFFORD COLLEGE

Committee on Non-Curricular Faculty Concerns, May 2012-present.

Tenure Committee, May 2012-Present.

Coach, Wofford College Programming Team (WoCoders), 2001-present.

Faculty Sponsor, Wofford Student Chapter of the Association for Computing Machinery, 2001-present.

Faculty Administrative Fellow, June-August 2013.

Faculty Sponsor, Wofford Robotics Cadre, 2008-2013.

Tenure Committee (At-large member), 2008-2011.

Career Services Advisory Committee, 2006-2008

Traffic Commission, 2005.

Information Technology Advisory Committee, 2002-2005.

FURMAN UNIVERSITY

Academic Computing Committee, 2000-2001.

Discipline Committee, 2000-2001.

WINTHROP UNIVERSITY

Institutional Effectiveness Self-Study Committee (1999).

College of Business Administration Assessment Committee (1998-1999).

Department of Computer Science and Quantitative Methods Petitions Committee (1998-1999).

Secretary of the Graduate Faculty Conference (1999).

Recording Secretary, Department of Computer Science and Quantitative Methods (1997-1999).

Library liaison for the Department of Computer Science and Quantitative Methods (1997-1999).

Department of Management and Marketing Faculty Search Committee (1999).

COMMUNITY ACTIVITIES

MCCRACKEN MIDDLE SCHOOL

Year-End Studies class in Web authoring, May 18-20, 2015.

Robotics Club mentor, Fall 2012-.

AMERICAN YOUTH SOCCER ORGANIZATION

Assistant soccer coach, Fall 2010.

ST. PAUL THE APOSTLE CATHOLIC CHURCH

Volunteer Webmaster, 2005-2015.

ST. PAUL THE APOSTLE CATHOLIC SCHOOL

Volunteer Webmaster, 2005-2010.