

VITA

Keith Brian Gallagher Computer Science Department
Loyola College in Maryland Donnelly Science 124
4501 N. Charles St. Baltimore, MD 21210
kbg@cs.loyola.edu <http://www.cs.loyola.edu/~kbg>

Department of Computer Science University of Durham
South Road DH1 3LE
Durham UK
k.b.gallagher@duram.ac.uk <http://www.durham.ac.uk/k.b.gallagher>

Education

- Ph. D. in Computer Science, The University of Maryland Graduate School at Baltimore.
- Master of Science in Computer and Communication Sciences, The University of Michigan.
- Master of Science in Mathematics, The University of Michigan.
- Bachelor of Arts in Mathematics, Bucknell University, Lewisburg, Pennsylvania.

Academic Appointments

- 1985 to present Associate Professor, (promoted from assistant professor and tenured, 1994) Computer Science Department, Loyola College in Maryland.
- 1982 to 1985: Assistant Professor of Computer Science, Houghton College, Houghton, New York 14744.

Research Appointments

- 2004: Visiting Research Fellow in Computer Science, University of Durham, England. (Professional Leave).
- 1997 to 1998: Visiting Senior Research Engineer at the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Canberra, Australia. (Sabbatical Appointment).
- 1992 to 2000: Faculty Research Associate, Information Technology Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland, 20899.

Research Interests

- Software Maintenance; Software Evolution; Empirical Studies; Program Slicing; Program Comprehension; Software Visualization; Software Testing
- What can I do to help software engineers “in the trenches?”

References

- [1] K. Gallagher. MonkeySort. *The Journal of Computing Sciences in Colleges*, 15(3), February 2005.
- [2] K. Gallagher. Some notes on interprocedural program slicing. In *Proceedings of the 4th Workshop on Source Code and Analysis, SCAM-4*, September 2004.
- [3] K. Gallagher, M. Harman, and S. Danicic. Guaranteed inconsistency avoidance during software evolution. *Journal of Software Maintenance and Evolution: Research and Practice*, 15:393–415, 2003.
- [4] K. Gallagher and L. Layman. Are decomposition slices clones? In *Proceedings of the 11th International Workshop on Program Comprehension*, 2003.
- [5] K. Gallagher and D. Binkley. An empirical study of computation equivalence as determined by decomposition slice equivalence. In *Proceedings of the 10th Working Conference on Reverse Engineering, WCRE-03*, 2003.
- [6] K. Gallagher and L. O’Brien. Analyzing programs via decomposition slicing. In *Proceedings of International Workshop on Empirical Studies of Software Maintenance, WESS*, 2001.
- [7] K. Gallagher and N. Fulton. Using program slicing to estimate software robustness. In *Proceedings of the International Systems Software Assurance Conference, ISSAC*, 1999.
- [8] S. Woods, L. O’Brien, T. Lin, K. Gallagher, and A. Quilici. An architecture for interoperable program understanding tools. In *Proceedings of the 6th International Workshop on Program Comprehension*, 1998.
- [9] M. Hutchens and K. Gallagher. Improving visual impact analysis. In *Proceedings of the 1998 International Conference on Software Maintenance-98*, 1998.
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- [13] D. Binkley and K. Gallagher. A survey of program slicing. In M. Zelkowitz, editor, *Advances in Computers*. Academic Press, 1996.
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- [15] J.R. Lyle, D.R. Wallace, J.R. Graham, K.B. Gallagher, J.E. Poole, and D.W. Binkley. *A CASE tool to evaluate functional diversity in high integrity software*. U.S. Department of Commerce, Technology Administration, National Institute of Standards and Technology, Computer Systems Laboratory, Gaithersburg, MD, 1995.
- [16] B. Kuhn, D. Smith, and K. Gallagher. The decomposition slice display system. In *Proceedings of the 1995 Conference on Software Engineering and Knowledge Engineering, SEKE '95*, June 1995.
- [17] K. Gallagher. The surgeon's assistant. In *Software Engineering Research Forum*, Boca Raton, FL, November 1995.
- [18] K. Gallagher and L. Berman. Applying metric-based object-oriented process modeling techniques to configuration management. In *Fourth International Workshop on Software Configuration Management*, June 1993. SCM-4.
- [19] K. B. Gallagher and J. R. Lyle. Program slicing and software safety. In *Proceedings of the Eighth Annual Conference on Computer Assurance*, June 1993. COMPASS '93.
- [20] K. Gallagher. Evaluating the surgeon's assistant: Results of a pilot study. In *Proceedings of the Conference on Software Maintenance - 1992*, November 1992.
- [21] K. B. Gallagher and J. R. Lyle. Using program slicing in software maintenance. *IEEE Transactions on Software Engineering*, 17(8), August 1991.
- [22] K. B. Gallagher. Using program slicing to eliminate the need for regression testing. In *Eighth International Conference on Testing Computer Software*, May 1991.
- [23] K. B. Gallagher. Conditions to assure semantically correct consistent software merges in linear time. In *Proceedings of the Third International Workshop on Software Configuration Management*, May 1991.
- [24] K. B. Gallagher. Surgeon's assistant limits side effects. *IEEE Software*, May 1990.
- [25] K. B. Gallagher, C. Mair, A. Ramina, R. Tom, and F. Gauthier. A tool to guide safe modifications. In *International Conference on Software Engineering*, May 1989.
- [26] K. B. Gallagher and J. R. Lyle. A program decomposition scheme with applications to software modification and testing. In *Proceedings of the 22nd Hawaii International Conference on System Sciences*, January 1989.
- [27] K. B. Gallagher. *Using Program Slicing in Software Maintenance*. PhD thesis, University of Maryland, Baltimore, Maryland, December 1989.
- [28] K. B. Gallagher and J. R. Lyle. Using program decomposition to guide modifications. In *Conference on Software Maintenance - 1988*, October 1988.

Invited Program Presentations

- “Techniques for Understanding and Mining Legacy Assets.” Invited program presentation, the International Workshop on Program Comprehension, Paris, France, 2002.
- “The Comprehender’s Workbench.” Invited program presentation, the International Workshop on Program Comprehension, Limerick, Ireland, 2000.
- “Software Surgery.” A Tutorial. Presented at:
 - 1999 International Conference on Software Maintenance, Keable College, Oxford, England.
 - 1998 International Conference on Software Maintenance, Washington, DC.
 - 1998 International Conference on Software Engineering, Kyoto, Japan.
- “More of What I Want From an Evolution System” at the *Durham Workshop on Program Transformation for Software Evolution*, Durham, England, 1996.
- “What I Want From an Evolution System” at the *ICSE-17 Workshop on Program Transformation for Software Evolution*, Seattle, WA, 1996.

Works in Progress

- “A Framework and Assessment of Software Architecture Visualisation Strategies” with M. Munro and A. Hatch, University of Durham. Submitted to International Conference on Software Engineering 2005.
- “3-D Visualization of Decomposition Slices.” with M. Smith, University of Durham. In preparation.
- “A Framework and Assessment of Fault-Injection Techniques for Web-Service Testing.” (working title) with N. Looker and M. Munro, University of Durham. In preparation.

Grants

- *Software Anatomy*, Submitted to the Royal Academy of Engineering Leverholme Senior Fellowships Program.
- *Software Engineering Challenges in e-Science*, with M. Munro. Submitted to the Engineering and Physical Sciences Research Council.
- *Evolution of Distributed Scientific Software*, with M. Munro. In preparation. To the Engineering and Physical Sciences Research Council.

Funded Grant Proposals

- Constructing the Surgeon’s Assistant, *National Institute of Standards and Technology, Information Technology Laboratory*, 1994-1996. \$375,000.
- Empirical Evaluation of the Surgeon’s Assistant, *Latannze Center for the Study of Executive Management Information Systems*, 1994. \$4,000.

- Evaluating Decomposition Slicing as a Software Maintenance Methodology, *Research Initiation Award of the National Science Foundation*, with Research Experience for Undergraduates supplement, 1991-1993. \$59,500
- Improving the Performance of the Surgeon's Assistant, *Latannze Center for the Study of Executive Management Information Systems*, 1991. \$10,500.

Et Cetera

- Research
 - 4 in vita produced with Loyola undergraduate, who is now a Ph.D. student in software engineering at North Carolina State University.
 - Articles reproduced in 2 Anthologies¹²
 - Maintenance testing techniques adapted for a textbook³
 - Approximately 250 hits on the CiteSeer web site.
 - Average 5+ cites per year in the past 5 International Conference on Software Maintenance proceedings (excluding self-references).
- Professional Activities
 - Editorial Board of the *Journal of Software Maintenance and Evolution*.
 - Program Committee for the International Conference on Software Maintenance.
 - Program Committee for the International Workshop on Program Comprehension.
 - External doctoral thesis reviewer (4).
 - Review for *IEEE Transactions on Software Engineering*, *Journal of Software Maintenance*, *IEEE Software*.
- Teaching
 - Recent undergraduate courses taught: Software Maintenance and Evolution; Software Engineering; Software Testing; Senior Seminar; Data Structures & Algorithms (sophomore course); Introduction to Computers with Software Applications (CS 111, the general education course).
 - Recent graduate courses taught: Software Maintenance and Evolution; Software System Specification; Discrete Mathematics.
 - For the past 5 years, 97% of the respondents on end-of-term questionnaires agreed that I encourage students to think for themselves; 94% agreed that I stimulate intellectual curiosity.
 - With the exception of Unravel, my undergraduates built the tool suite used in the Software Surgery tutorial, the *Surgeon's Assistant*.

¹Bohner and Arnold, *Software Change Impact Analysis* IEEE Press, 1996.

²R. Arnold, *Software Reengineering* IEEE Press, 1994.

³P. Jorgensen *Software Testing: A Craftsman's Approach* CRC Press. Second edition. 2002

- Involved my Software Engineering Classes in some preliminary research in possible automated tools for assuring International Standards Organization (ISO) process compliance. One Software Engineering class developed a tool, **ISO-lite**, that is being used by subsequent classes to collect and analyze data on software process improvement.

- College Service

- Associate Director of Master of Engineering Science degree program, 2001 - 2003. Accomplishment: redesigned M.E.S. into M.S. in Computer Science and separate M.S in Software Engineering.
- Faculty Affairs Committee, (Faculty Rights and Welfare) chair, 2001 - 2003.
- Loyola Conference, (Principal College Governance Body) *ex officio*, 2001 - 2003.
- Faculty Affairs Committee, vice chair, 2000 - 2001.
- Executive Committee, (sets agendas for Conference and Senate.) 2001 - 2003.
- Faculty Compensation Committee, *ex officio* 2000 - 2001.
- Department Senator, 2000 - 2003.
- Faculty Evaluation Committee, 1998 - 2000