Brady J. Garvin

Computer Science and Engineering Department

University of Nebraska–Lincoln

Lincoln, NE 68588-0115

USA

Phone: +14028338108

Fax: +14024727767

E-mail: bgarvin@cse.unl.edu

http://cse.unl.edu/~bgarvin/

Education

Ph.D. in software engineering. Dissertation: *The Variability-Space Topography of Interaction Faults*. Advisor: Myra B. Cohen. Graduation from the University of Nebraska–Lincoln in August, 2017.

Masters of science in software engineering. Thesis: *Constrained Covering Arrays by Simulated Annealing*. Advisor: Myra B. Cohen. Graduation from the University of Nebraska–Lincoln in December, 2009.

Bachelors of science with a double major in computer science and mathematics and a minor in business; graduation from the J. D. Edwards Honors Program in Computer Science and Management (JDEHP), now the Jeffrey S. Raikes School of Computer Science and Management, at the University of Nebraska–Lincoln. May, 2008.

Teaching (University of Nebraska–Lincoln)

Software Engineering 261: *Software Engineering IV*. Co-taught with Dr. Suzette Person. Spring, 2019.

Software Engineering 161: *Software Engineering II*. Co-taught with Dr. Suzette Person and Dr. Chris Bohn. Spring, 2019.

Software Engineering 260: *Software Engineering III*. Co-taught with Dr. ThanhVu (Vũ) H. Nguyen. Fall, 2018.

Software Engineering 160: *Software Engineering I*. Co-taught with Dr. Suzette Person. Fall, 2018.

Software Engineering 162: *Software Engineering Fundamentals*. Summer, 2018.

Software Engineering 261: *Software Engineering IV*. Co-taught with Dr. Suzette Person. Spring, 2018.

Software Engineering 161: *Software Engineering II*. Co-taught with Dr. Suzette Person and Dr. Chris Bohn. Spring, 2018.

Software Engineering 260: *Software Engineering III*. Co-taught with Dr. Vinod Variyam. Fall, 2017.

Software Engineering 160: *Software Engineering I*. Co-taught with Dr. Suzette Person. Fall, 2017.

Software Engineering 162: *Software Engineering Fundamentals*. Summer, 2017.

Software Engineering 161: *Software Engineering II*. Co-taught with Dr. Suzette Person. Spring, 2017.

Software Engineering 160: *Software Engineering I*. Co-taught with Dr. Suzette Person. Fall, 2016.

Teaching (Nebraska Wesleyan University)

Computer Science 1500: *Program Design.* Spring, 2016.
Computer Science 1000: *Introduction to Computational Problem Solving.* Fall, 2015.
Computer Science 1500: *Program Design.* Spring, 2015.
Computer Science 1000: *Introduction to Computational Problem Solving.* Fall, 2014.
Computer Science 200: *Formal Languages and Automata.* Fall, 2012.
Computer Science 30: *Introduction to Computational Problem Solving.* Fall, 2012.
Computer Science 260: *Programming Languages.* Fall, 2011.

Publications

J. Swanson, M. B. Cohen, M. B. Dwyer, B. J. Garvin, and J. Firestone. *Beyond the Rainbow: Self-Adaptive Failure Avoidance in Configurable Systems.* In the International Symposium on Foundations of Software Engineering (FSE). November, 2014.

B. J. Garvin, D. Stolee, R. Tewari, and V. Variyam. *ReachFewL = ReachUL.* In Computational Complexity. March, 2014.

S. Apel, S. Kolesnikov, N. Siegmund, C. Kästner, and B. J. Garvin. *Exploring Feature Interactions in the Wild: The New Feature-Interaction Challenge.* In the International Workshop on Feature-Oriented Software Development (FOSD). October, 2013.

B. J. Garvin, M. B. Cohen, and M. B. Dwyer. *Failure Avoidance in Configurable Systems Through Feature Locality.* In Autonomous and Self-Adaptive Systems (ASAS [book]). February, 2013.

B. J. Garvin and M. B. Cohen. *Feature Interaction Faults Revisited: An Exploratory Study.* In the International Symposium on Software Reliability Engineering (ISSRE). November, 2011.

B. J. Garvin, M. B. Cohen, and M. B. Dwyer. *Using Feature Locality: Can We Leverage History to Avoid Failures During Reconfiguration?* In the Workshop on Assurances for Self-Adaptive Systems (ASAS [workshop]). September, 2011.

B. J. Garvin, D. Stolee, R. Tewari, and V. Variyam. *ReachFewL = ReachUL.* In the International Computing and Combinatorics Conference (COCOON). August, 2011.

B. J. Garvin, M. B. Cohen, and M. B. Dwyer. *Evaluating Improvements to a Meta-Heuristic Search for Constrained Interaction Testing.* In Empirical Software Engineering (EMSE). July, 2010.

E. Sherman, B. J. Garvin, and M. D. Dwyer. *A Slice-based Decision Procedure for Type-based Partial Orders.* In Proceedings of the International Joint Conference on Automated Reasoning (IJCAR). July, 2010.

B. J. Garvin, M. B. Cohen, and M. B. Dwyer. *An Improved Meta-Heuristic Search for Constrained Interaction Testing.* In Proceedings of the International Symposium on Search Based Software Engineering (SSBSE). May, 2009.

Fellowships

CFDA#47.076: Graduate Research Fellowship
    National Science Foundation
    June, 2010–Present

CFDA#84.200A: Graduate Assistance in Areas of National Need (GAANN) Fellowship
    U.S. Department of Education, Office of Postsecondary Education
    August, 2008–May, 2009

Awards

The Outstanding Graduate Research Assistant Award
    UNL Computer Science and Engineering Department
    April, 2010
The Outstanding Master's Student Award
    UNL Computer Science and Engineering Department
    April, 2010
The Golden Keyboard Award (for helping other students to learn computer science)
    Jeffrey S. Raikes School of Computer Science and Management
    May, 2008

Academic Positions

Assistant Professor of Practice
    UNL Computer Science and Engineering Department
    Helped develop and teach the core courses for the department's new major in software
        engineering.
    August 2016–Present
Adjunct Professor
    Nebraska Wesleyan University
    Taught both upper- and lower-level undergraduate computer science courses for both
        majors and non-majors.
    August 2011–Present
Research Assistant
    UNL Computer Science and Engineering Department
    Pioneered new techniques for understanding, preventing, discovering, and mitigating
        feature-interaction faults in highly-configurable software.
    August 2008–Present
Teaching Assistant
    Jeffrey S. Raikes School of Computer Science and Management
    Assisted with JDEP284: Foundations of Computer Systems.
    Wrote and graded homework, labs, quizzes, and parts of the final project; also lectured
        for the labs.
    January 14, 2008–May 3, 2008
Teaching Assistant
    Jeffrey S. Raikes School of Computer Science and Management
    Assisted with JDEP283: Data Structures and Algorithms.
    Wrote and graded parts of the homework and parts of the final project.
    August 27, 2007–December 19, 2007

Non-Academic Research Positions

Summer Internship
> National Institute of Aerospace (NIA); National Aeronautics and Space Administration (NASA)
> Invented a technique for combining Bernstein bounds with incremental SAT solving to create a (necessarily partial) decider for the theory of real arithmetic.
> May 21–August 24, 2012

Service

Graduate Representative to the Computer Science and Engineering Curriculum Committee
> UNL Computer Science and Engineering Department
> September 2009–May 2010

Outreach-Related Volunteering

Club Leader, 3D Printing Club
> Prescott Elementary
> Taught fourth and fifth graders computer science concepts in OpenSCAD, a constructive solid geometry package that can export programs' results to a 3D printer
> January 2015–May 2015

Classroom Assistant
> Elliott Elementary
> Supported language arts instruction in a fourth grade classroom; launched a podcast and trained students to use it to share stories they had written
> August 2009–May 2010

Computer Science Work Experience

Product Support Developer
> International Business Machines Corporation (IBM)
> Prototyped automated server support tools.
> August 2007–May 2008

Web Developer
> Design Data Corporation
> Created an X3D plugin, a tool to export a proprietary database as X3D, and a tool to capture Tcl/Tk windows for presentation in a Web browser.
> August 2006–May 2007

Database Designer
> Jeffrey S. Raikes School of Computer Science and Management
> Normalized and extended an alumni database.
> October 2005–December 2005

Library Developer
    UNL Statistics Department
    Authored a custom matrix library in C++ for statistical research.
    April 11, 2005–May 23, 2005
Web Developer
    UNL Physics Department
    Integrated a WYSIWYG editor into the administration side of a physics Web site.
    March 11, 2005–May 13, 2005
Inter-op Developer
    Jeffrey S. Raikes School of Computer Science and Management
    Built the Excel inter-op module and some GUIs for a JDEHP Design Studio Project.
    February 8, 2005–April 20, 2005

Other Work Experience

Site Coordinator
    Nebraska Lutheran Outdoor Ministries (in partnership with the Lutheran Outdoor Ministries Association of Kansas)
    Oversaw counselors and specialists, provided health care, lived with campers, led all-site activities, and covered odd jobs.
    May 18, 2009–July 27, 2009; May 19, 2008–July 28, 2008
Camp Counselor
    Nebraska Lutheran Outdoor Ministries (in partnership with the Lutheran Outdoor Ministries Association of Kansas)
    Lived with and led groups of 5-9 campers each week (usually elementary-age), listening, teaching, and spending time outdoors.
    May 23, 2007–August 1, 2007; May 22, 2006–August 1, 2006; May 25, 2005–August 6, 2005
Speech Judge
    Wayne Public Schools
    Rated and provided constructive feedback to high school age competitors.
    January 7, 2006–February 25, 2006; January 8, 2005–February 26, 2005