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RESEARCH

Software engineering, program comprehension, source code search, information retrieval in software engineering, repository mining, software evolution and maintenance, traceability,

EXPERIENCE

Lecturer 2016 – *present*
University of Pennsylvania
School of Engineering and Applied Science
Department of Computer and Information Science

EDUCATION

Ph.D.	University of Notre Dame, Computer Science Title: <i>"Automatic Documentation Generation for Software"</i> Committee: Collin McMillan, David Chiang, Lori Pollock, Aaron Strigel, Douglas Thain	2016
M.S.	West Virginia University, Computer Science	2012
B.S.	West Virginia University, Computer Science	2010

HONORS AND AWARDS

ACM SigSoft Travel Grant (\$800)	2015
Notre Dame CSE Outstanding TA Award (\$100)	2015
ICPC Best Paper Award	2014
IEEE ACM Distinguished Paper Award	2014
GAANN Fellowship (\$37,714)	2013-Present

TEACHING

INSTRUCTOR OF RECORD

University of Pennsylvania - Department of Computer and Information Science

For all courses at the University of Notre Dame, I was the sole instructor of record unless otherwise noted. Unless otherwise noted, I was solely responsible for and performed all of the following tasks: I prepared and delivered lectures, held office hours, hired and trained Teaching Assistants, and maintained course infrastructure, including distribution, submission, and grading of homeworks and exams. I would maintain communication with students via office hours, email, and the Piazza online forum platform. I prepared and delivered final grades for the course. Under each course, I list the course size, as well as *new* contributions to that course not covered in the paragraph above.

CIS 110 Introduction to Computer Programming Fall 2018

Two sections of 300 student combined. Rewrote multiple homeworks and generated new testing and video assistance. Implemented one new homework assignment successfully that great improved students initial understanding of object orientation. Co-instructed with Adam Mally, however I handled all classroom lecturing, assignment preparation, exam writing and most student communication. Adam Mally primarily handled training teaching assistants and make-up exam scheduling.

CIS 110 Introduction to Computer Programming Summer 2018

One section of 30 students. Reimplemented two homework assignments to add more practice for function writing and testing in the summer term, which previous sections were lacking.

CIS 350 Software Design and Engineering Spring 2018

One section of 190 students. Wrote two new homeworks assignments and reworked the lecture and homework assignments around design patterns and testing to better attain learning objectives. Additionally took on the added responsibility of maintaining the course project, including hiring and training project managers for each group project.

CIT 594 Data Structures and Software Design Spring 2018

One section of 75 students. Developed 4 new homework assignments, and significantly improved the testing and design patterns portion of the course.

CIS 110 Introduction to Computer Programming Fall 2017

Two sections of 330 students combined. Developed a new homework assignment to further reinforce object orientation, while also teaching students design concepts and the Java ArrayList API. Co-instructed with Adam Mally, however I handled all classroom lecturing, homework deployment and testing, and a majority of student communication. Adam Mally primarily handled assignment deployment, exam scheduling, and the training of teaching assistants.

CIS 110 Introduction to Computer Programming Summer 2017

One section of 35 students. Rewrote many slides for the course to fit them more closely to my teaching style, as well as address the faster pace of the summer course.

CIS 350 Software Design and Engineering Spring 2017

One section of 195 students. Maintained primary lecture, homework, and exam portion of the course. I worked in close congree with a co-instructor, Chris Murphy, who managed the project portion of the course. Developed two new homework assignments.

CIT 590 Programming Languages and Techniques Spring 2017

One section of 90 students. Instructed students in three programming languages, Python, Processing, and Java. Wrote 4 new homework assignments.

CIS 110 Introduction to Computer Programming Fall 2016

Two sections of 370 students combined. Co-instructed the course with Benedict Brown. Instructed approximately half of the lectures, added many new code examples to the course, and wrote one new homework assignment. Assisted in adding Gradescope automatic integration to the course infrastructure.

CIT 594 Data Structures and Software Design Fall 2016

One section of 30 new graduate students. Developed new course slides and notes. Developed two new homework assignments.

CIS 110 Introduction to Computer Programming Summer 2016

Learned and utilized the course infrastructure rapidly. Developed new slides and code examples that have been utilized in the course since.

University of Notre Dame - Department of Computer Science and Engineering

CSE 40323 Software Engineering Fall 2014

Designed and implemented a semester-long senior level technical elective of 18 students. Responsibilities included writing and delivering lectures, writing and grading assignments, coordinating and mentoring students on semester projects, coordinating and mentoring students on a semester research assignment, holding office hours, communicating with students outside of class, and managing class website.

West Virginia University - Lane Department of Computer Science and Electrical Engineering

CS 310 Principles of Programming Languages Summer 2012

Implemented a junior-level core requirement course of 12 students over a 6-week summer session. This included writing and delivering lectures, adapting previous semester assignments, grading assignments, holding office hours, communicating with students outside of class, and managing class website.

PUBLICATIONS

McBurney, P. W., Jiang, S., Kessentini, M., Kraft, N., Armaly, A., Mkaouer, W., McMillan, C., "Towards Prioritizing Documentation Effort", in Transactions on Software Engineering (TSE), accepted May 2017. Journal First.

Cruz, B. D., **McBurney, P. W.**, McMillan, C., "TraceLab Components for Reproducing Source Code Summarization Experiments", in Proc. of the 32nd IEEE International Conference on Software Maintenance and Evolution, Artifacts Track (ICSME'16 Artifacts), Raleigh, North Carolina, USA, October 2016.

McBurney, P. W., McMillan, C., "Automatic Source Code Summarization of Context for Java Methods", in IEEE Transactions on Software Engineering (TSE), vol. 42, no. 2, pages 103-119..

McBurney, P. W., Liu, C., McMillan, C., "Automated Feature Discovery via Sentence Selection and Source Code Summarization", Journal of Software Evolution and Process (JSEP), volume 28, issue 2, February 2016, pages 120-145.

Rodeghero P., Liu C., **McBurney P. W.**, McMillan C., "An Eye-Tracking Study of Professional Programmers and Application to Source Code Summarization", IEEE Transactions on Software Engineering, vol. 41, no. 11, November 2015, pp. 1038-1054.

McBurney, P. W., McMillan, C., "An Empirical Study of the Textual Similarity between Source Code and Source Code Summaries", in Empirical Software Engineering (EMSE), vol. 21, no. 1, February 2016, pp. 17-42

McBurney, P. W., "Automatic Documentation Generation via Source Code Summarization," *Proc. of 37th IEEE/ACM International Conference on Software Engineering, Doctoral Symposium (ICSE'15)* vol.2, no., pp.903-906, 16-24 May 2015

McBurney, P. W., McMillan, C., "Automatic Documentation Generation via Source Code Summarization of Method Context", in *Proc. of 22nd International Conference on Program Comprehension (ICPC'14)*, Hyderabad, India, June 2-3 2014, 12 pages. **Best Paper Award.**

Rodeghero, P., McMillan, C., **McBurney, P. W.**, Bosch, N., D'Mello, S., "Improving Automated Source Code Summarization via an Eye-Tracking Study of Programmers", in *Proc. of 36th IEEE/ACM International Conference on Software Engineering (ICSE'14)*, Hyderabad, India, May 31-June 7 2014, 12 pages. (20% acceptance rate) **ACM Distinguished Paper Award.**

McBurney, P. W., Liu, C., McMillan, C., and Weninger, T., "Improving Topic Model Source Code Summarization", in *Proc. of 22nd International Conference on Program Comprehension*, Early Research Achievements Track (ICPC'14 ERA), Hyderabad, India, June 2-3 2014, 4 pages.

PROFESSIONAL ACTIVITIES

Service

University of Pennsylvania

2018 Advised 5 first year undergraduate students in pilot process utilizing lecturers as advisors in the CIS Department

2018 Served on infrastructural committee for the department. Responsibilities included writing documentation to help colleagues use existing and available educational and research infrastructure, researching new educational infrastructure products, and the creation of a Lab Manager position for the introductory line of CIS courses (CIS 110, 120, 121, and 160).

2018 Advised 2 Senior Projects

2017 Advised 1 Senior Project

Continually maintained and improved home-grown course infrastructure used by multiple courses in the CIS Department.

Reviewer

2018 IEEE Transactions on Software Engineering

2018 International Workshop on Software Analytics

2017 International Workshop on Software Analytics

2016 International Workshop on Software Analytics

2015 Journal of Software Evolution and Process

Sub-Reviewer

2015 23rd IEEE International Conference on Program Comprehension
23rd International Conference on Software Reuse

2014 31st IEEE International Conference on Software Maintenance and Evolution, ERA Track