JONATHAN A. SADDLER, PH. D.

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PRIMARY RESEARCH INTERESTS

How the Structure of a Program affects Program Comprehension

Streamlining Performance on Desktop and Web GUI Interfaces

EDUCATION

Ph. D., Computer Science, 2020
University of Nebraska-Lincoln Lincoln, NE
Dissertation Topic: *Understanding Eye Gaze Patterns in Code Comprehension*

Master of Science, Computer Science, 2018
University of Nebraska-Lincoln
Thesis: *EventFlowSlicer: A Goal Based Test Case Generation Strategy for Graphical User Interfaces*

Bachelor of Arts, Computer Science, 2013
DePauw University, Greencastle, IN

AWARDS

2020 CRA Postdoctoral Computing Innovation Fellows Award (chose not to accept) (July 2020)

Travel Grant to attend the ACM/SIGSOFT FSE Conference 2016 (Nov. 2016)
(Seattle, WA)

Travel Grant to attend the CRA URMD Graduate Cohort Conference 2019 (Mar. 2019)
(Waikoloa, HI)

PUBLICATIONS

(Ph. D. Dissertation)
Saddler, J. A., "Understanding Eye Gaze Patterns in Program Comprehension: A Dissertation" Ph. D. Dissertation. University of Nebraska, Lincoln, May 2020. Available: https://digitalcommons.unl.edu/computerscidiss/194

(Master's Thesis)
Saddler, J., "EventFlowSlicer: A Goal-based Test Case Generation Strategy for Graphical User Interfaces: A Thesis," Master's thesis, University of Nebraska, Lincoln, May 2016. Available: https://digitalcommons.unl.edu/computerscidiss/111

CONFERENCE PUBLICATIONS:

Saddler, J. A., Peterson, C. S., Sama, S., Nagaraj, S., Baysal, O., Guerrouj, L., and Sharif, B. "Studying Developer Reading Behavior on Stack Overflow during API Summarization Tasks." in *Proceedings of the 27th International Conference on Software Analysis, Evolution, and Reenginering (SANER 2020)*. London, Ontario, Canada, February 2020. Available: https://doi.org/10.1109/SANER48275.2020.9054848

Saddler, J. A., Peterson, C., Peachock, P., and Sharif, B., "Reading Behavior and Comprehension of C++ Source Code – A Classroom Study," Schmorrow D., Fidopiastis C. (eds) *Augmented Cognition. HCII (21st International Conference on Human Computer Interaction)* 2019. *Lecture Notes in Computer Science, vol 11580. Springer, Cham.* [Online] Available: https://doi.org/10.1007/978-3-030-22419-6_43

Mansoor, N, **Saddler, J. A.**, Silva, B., Bagheri, H., Cohen, M. B., and Farritor, S. "Modeling and Testing a Family of Surgical Robots: An Experience Report", in *Proceedings of the 26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE),* Nov. 2018. pp. 785-790. [Online]. Available: https://doi.org/10.1145/3236024.3275534

WORKSHOP PUBLICATIONS

Saddler, J. A., Cohen, M. B. "EventFlowSlicer: A tool for generating realistic goal-driven GUI tests," in *2017 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE).* IEEE, Oct. 2017, pp. 955-960. [Online]. Available: http://dx.doi.org/10.1109/ase.2017.8115711

Peterson, C. S., **Saddler, J.,** Blascheck T., and Sharif, B., "Visually Analyzing Students' Gaze on C++ Code Snippets," in *Proceedings of the 6th International Workshop on Eye Movements in Programming*, Montreal, Quebec, Canada, May 2019. [Online] Available: https://doi.org/10.1109/EMIP.2019.00011

Peterson, C. S., **Saddler, J. A.,** Halavick, N. M., and Sharif, B., "A Gaze-Based Exploratory Study on the Information Seeking Behavior of Developers on Stack Overflow," in *CHI '19 Extended Abstracts on Human Factors in Computing Systems*, May 2019. [Online] Available: https://doi.org/10.1145/3290607.3312801

Saddler, J. and Cohen, M. B. "EventFlowSlicer: Goal Based Test Case Generation for Graphical User Interfaces," in *Proceedings of the 7th International Workshop on Automating Test Design, Selection, and Evaluation,* ser. A-TEST 2016. New York, NY, USA: ACM, 2016, pp. 8-15. [Online]. Available: http://dx.doi.org/10.1145/2994291.2994293

COMPUTING TEACHING EXPERIENCE

CSCI 4230: Software Engineering II
Teaching Assistant Professor of Computer Science, East Carolina University, Spring 2021

> Administrated a 15-week capstone course introducing students to team-based software product development
> Led through a step-by-step construction of Jira issues and sprints for timely and transparent development progress
> Required that students implement automated testing strategies in production repositories for course completion

SENG 1020: Data Structures for Software Engineers
Teaching Assistant Professor of Computer Science, East Carolina University, Spring 2021

> Introduced students of ECU's new software engineering program to Python via a full set of lectures
> Proposed techniques on methods in the design of lists, trees, and complex data structures
> Selected and implemented multiple assessments per week involving auto-graded submission of runnable code

SENG 2000: Advanced Data Structures and Algorithms
Teaching Assistant Professor of Computer Science, East Carolina University, Fall 2020 **and** Spring 2021

> Oversaw the introduction of an advanced course to be adapted to fit into university-wide 8-week scheduling
> Introduced students to the production of correct results using list sorting and searching, dynamic programming, and simple-to-understand graph-based algorithms
> Led the construction, grading, and assessment of assignments distributed in Python, Java and C++

SENG 5005: Discrete Structures and Algorithmic Foundations
Teaching Assistant Professor of Computer Science, East Carolina University, Fall 2020 (first 4 Wks)

> Introduced graduate students to the concept of learning the computing fundamentals of sets and counting
> Led discussions on the appropriateness of proof structures for specific types of set-based theories

SENG 1000: Software Engineering Foundations and Practice
Teaching Assistant Professor of Computer Science, East Carolina University, Fall 2020

> Introduced students to modern software engineering and computational problem-solving using Java
> Introduced concepts of requirements, design, testing, integration, and maintenance
> Oversaw the adaptation of 15-week course material to fit university-wide 8-week scheduling

CSCE 361: SOFTWARE ENGINEERING
Graduate Teaching Assistant, University of Nebraska, Lincoln, Summer 2016
> Graded pre-planned and constructed homework assignments.
> Oversaw grading of web-based design final project involving waterfall v. scrum simulation

CSCE 155A: COMPUTER SCIENCE I: INTRODUCTION TO JAVA
Graduate Teaching Assistant, University of Nebraska, Lincoln, Spring 2016
> Led 1 of 3 lab instruction sessions for a class size of 80 students.
> Oversaw much of the grading processes, and GUI-construction final project.
> Offered automated testing mechanism from research for grading GUI construction final project

CSCE 155A: COMPUTER SCIENCE I: INTRODUCTION TO JAVA
Graduate Teaching Assistant, University of Nebraska, Lincoln, Fall 2015
> Led 2 of 6 weekly laboratory instruction sessions for a class size of 120 students.
> Oversaw the grading processes for weekly homework.
> Helped oversee GUI-construction final project

COMPUTING RESEARCH EXPERIENCE

Graduate Research Assistant in UNL ESQUARED Lab
2013 – Current
University of Nebraska-Lincoln · Lincoln, NE

- Bring together data from eye-tracker experiments examining how developers browse bug repositories, online Q&A forums, their IDE's, and combinations of the three.
- Actively lead opportunities to develop cutting-edge research advancing the state-of-the-art in learning cognitive processes behind developers comprehend code and comprehend tasks in GUI interfaces.
- Develop automated strategies and feature model designs that help specify and generate tests mimicking human users achieving real goals, and model feature space of large applications.

Summer Research Intern in VOTER Lab,
Summer 2012
University of Connecticut · Storrs-Mansfield, CT

- Work with voting system auditors on a DOD sponsored project to improve auditing procedures

Summer Research Intern in Energy and Networking Lab
Summer 2011
Jackson State University · Jackson, MS

- Complete research under faculty supervision on a network path energy minimization algorithm
- Successfully produce a summer capstone paper and software artifact demonstrating results

OTHER PROFESSIONAL COMPUTING EXPERIENCES

Workday Summer Intern in OMS Optimization
Summer 2018
Workday · Boulder, CO

- Work on company's latest technology involving cloud based transactions and speed optimization
- Research and report weekly on building a constraint solver for scheduling problems

WGRE Station Web Developer 2010-2013

WGRE 91.5 FM · Greencastle, IN

- Produce a redesign of the station website from backend to homepage
- Consult with 8 station managers for timely daily and weekly updates to station website content

SOCIAL LEADERSHIP IN COMPUTING

Graduate Student Association Vice President

University of Nebraska-Lincoln, Department of Computer Science and Engineering (2017 – 2018)

Graduate Student Association Treasurer

University of Nebraska-Lincoln, Department of Computer Science and Engineering (2014 – 2015)

Graduate Student Representative to the Space and Facilities Committee

University of Nebraska-Lincoln, Department of Computer Science and Engineering (2013 – 2014)

President and Organizer

DePauw University Association of Computing Machinery – Student Chapter (2010 – 2012)