

Brittany Johnson

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Assistant Professor

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EDUCATION

Doctor Philosophy, North Carolina State University AUG 2017
Thesis: A Tool (Mis)communication Theory and Adaptive Approach for Supporting Developer Tool Use

Bachelor of Arts in Computer Science, College of Charleston MAY 2011

PEER-REVIEWED PUBLICATIONS

Brittany Johnson and Justin Smith. *Towards Ethical Data-Driven Software: Filling the Gaps in Ethics Research & Practice*. SEthics 2021, co-located with ICSE 2021.

Brittany Johnson, Yuriy Brun, & Alexandra Meliou. *Causal Testing: Understanding Defects' Root Causes*. International Conference on Software Engineering 2020.

Brittany Johnson, Thomas Zimmermann, & Christian Bird. *The Effect of Work Environments on Productivity and Satisfaction of Software Engineers*. IEEE Transactions on Software Engineering 2019.

Rico Angell, **Brittany Johnson**, Yuriy Brun, & Alexandra Meliou. *Themis: Automatically testing software for discrimination*. International Symposium on the Foundations of Software Engineering 2018. Demonstrations Track.

Justin Smith, **Brittany Johnson**, Emerson Murphy-Hill, Bill Chu, & Heather Ritcher. *How Developers Diagnose Potential Security Vulnerabilities with a Static Analysis Tools*. IEEE Transactions on Software Engineering 2018.

Devarshi Singh, Varun Ramachandra Sekar, Kathryn T. Stolee, & **Brittany Johnson**. *Evaluating how static analysis tools can reduce code review effort*. IEEE Symposium on Visual Languages and Human Centric Computing 2017.

Brittany Johnson, Rahul Pandita, Justin Smith, Denae Ford, Sarah Elder, Emerson Murphy-Hill, & Sarah Heckman. *A Cross-Tool Communication Study on Program Analysis Tool Notifications*. International Symposium on the Foundations of Software Engineering 2016.

Titus Barik, Yoonki Song, **Brittany Johnson**, & Emerson Murphy-Hill. *From Quick Fixes to Slow Fixes: Reimagining Static Analysis Resolutions to Enable Design Space Exploration*. International Conference on Software Maintenance and Evolution 2016.

Brittany Johnson, Rahul Pandita, Emerson Murphy-Hill, & Sarah Heckman. *Bespoke Tools: Adapted to the Concepts Developers Know*. International Symposium on the Foundations of Software Engineering 2015. New Ideas and Emerging Results (NIER).

Titus Barik, **Brittany Johnson**, & Emerson Murphy-Hill. *I Heart Hacker News: Expanding Qualitative Research Findings by Analyzing Social News Website*. International Symposium on the Foundations of Software Engineering 2015. New Ideas and Emerging Results (NIER).

Justin Smith, **Brittany Johnson**, Emerson Murphy-Hill, Bill Chu, & Heather Lipford. *Questions Developers Ask While Diagnosing Potential Security Vulnerabilities with Static Analysis*. International Symposium on the Foundations of Software Engineering 2015.

Titus Barik, Jim Witschey, **Brittany Johnson**, & Emerson Murphy-Hill. *Compiler Error Messages Revisited: An interaction-first approach for helping developers more effectively comprehend and resolve compiler error messages*. International Symposium on the Foundations of Software Engineering 2014. New Ideas and Emerging Results (NIER).

Brooke Jordan, **Brittany Johnson**, Jim Witschey, & Emerson Murphy-Hill. *Designing Intervention to Persuade Software Developers to Adopt Security Tools*. CCS Workshop on Security Information Workers 2014.

Brittany Johnson, Yoonki Song, Emerson Murphy-Hill, & Robert Bowdidge. *Why Don't Software Developers Use Static Analysis Tools to Find Bugs?* International Conference on Software Engineering 2013.

TECHNICAL CONTRIBUTIONS

fairkit-learn	A fairness evaluation and comparison toolkit	http://go.gmu.edu/fairkit-learn
Holmes	A proof-of-concept Causal Testing prototype	http://holmes.cs.umass.edu
Themis	A prototype tool for software fairness testing	http://fairness.cs.umass.edu

RESEARCH EXPERIENCE

ASSISTANT PROFESSOR

AUG 2020 — Present

George Mason University

Fairfax, VA

- Researching sociotechnical problems pertaining to developer productivity, software development, and software use.
- Implementing and evaluating software tools and techniques.
- Teaching software engineering courses
- Mentoring and advising students (graduate and undergraduate)

POSTDOCTORAL RESEARCH ASSOCIATE

AUG 2017 — AUG 2020

University of Massachusetts Amherst

Amherst, MA

- Investigated fairness and debugging in software engineering
- Implemented and evaluated a testing tool to help developers determine the cause of test failures
- Implemented and evaluated tools that support software and machine learning model fairness.
- Mentored students (graduate and undergraduate) working on software fairness

NSF GRADUATE RESEARCH FELLOW / GRADUATE RESEARCH ASSISTANT

AUG 2011 — AUG 2017

NC State University

Raleigh, NC

- Conducted empirical studies on program analysis tool use
- Implemented and evaluated models and tools for improving tool usability
- Mentored students (graduate and undergraduate) on various research projects

RESEARCH INTERN

MAY 2015 — AUG 2015

Microsoft Research

Redmond, WA

- Explored the relationship between work environments, satisfaction, and productivity
- Presented incremental findings to other researchers and developers

PROFESSIONAL SERVICE

Diversity, Inclusion, and Belonging Co-Chair, ICSE 2022

Co-Organizer, FairWare 2022 (Co-located with ICSE)

Diversity, Inclusion, and Belonging Co-Chair, ASE 2019

Program Committee Member, MSR Mining Challenge 2019

Program Committee Member, ESEC-FSE 2019

Program Committee Member, ICSE 2019, Demonstrations Track

Reviewer, Transactions on Software Engineering 2018

Co-Organizer, FairWare 2018 (Co-located with ICSE)

Program Committee Member, ASE 2018

Program Committee Member, ESEC-FSE 2018, NIER Track

Program Committee Member & Judge, ESEC-FSE 2018, ACM Student Research Competition

Program Committee Member, ESEC-FSE 2018, NIER Track

INVITED TALKS

Improving Software (E)quality with Empirically Validated Practices, University of Utah Invited Speaker, Virtual Presentation, November 2021

Towards Building Ethically-Sound Data-Driven Software, 50th Argentine Conference on Computer Science Keynote (JAIIO 50), Virtual Presentation, October 2021

Towards Building Ethically-Sound Data-Driven Software, ACM SIGPLAN conference on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH) Onward! Keynote, Virtual Presentation, November 2020

Surviving (and Thriving) in STEM, University of Connecticut Annual Technology, Engineering, and Science Latinx Symposium (TESLAS) Keynote, October 2019

Software (Un)Fairness, University of Massachusetts Amherst Center for Data Science Research Symposium, April 2018

Surviving (and Thriving) in Grad School, University of Massachusetts Amherst LS-AMP meeting invited speaker, February 2018