Jonathan Bell

CONTACT INFORMATION	Khoury College of Computer Sciences Northeastern University 360 Huntington Ave Boston, MA 02115 MA	*E-mail:* *WWW:* *GitHub:*	j.bell@northeastern.edu jonbell.net jon-bell

RESEARCH INTERESTS

Software engineering: continuous integration, reliability and security, software testing, software systems, mobile computing

EDUCATION

Columbia University, New York, NY USA
Ph.D., Computer Science, 2016

- Advisor: Professor Gail Kaiser
- Area of Study: Software Engineering and Software Systems
- Thesis Topic: *Making Software More Reliable by Uncovering Hidden Dependencies*

M.Phil., Computer Science, 2014

M.S., Computer Science, 2011

B.S., Computer Science, 2010, *Cum Laude*

AWARDS AND HONORS

Dahl-Nygaard Junior Prize
An international prize given annually to an early career researcher who has made a significant technical contribution to object-oriented programming. 2020.

George Mason University Teacher of Distinction
University-wide award in recognition of course planning and preparation, curriculum development, innovative teaching, advising, and undergraduate and graduate mentoring. 2020.

NSF CAREER Award
National Science Foundation Faculty Early Career Development Award. 2019.

Distinguished Paper Awards
Awarded to the top papers at a conference. Received at ICPC 2016 and ICSE 2014.

Distinguished Reviewer Awards
Awarded to the top reviewers on a program conference committee. Received at ICSE 2024, ESEC/FSE 2022, ICSE 2022, ICSE 2021, ICSE 2020 and ASE 2018.

PUBLICATIONS

Journals

1. Hough, K. and J. Bell. Dynamic Taint Tracking for Modern Java Virtual Machines. In: 2.(FSE) (2025). Acceptance rate: 22%. https://www.jonbell.net/preprint/fse25-galette.pdf.

2. Tip, F., J. Bell, and M. Schäfer. LLMorpheus: Mutation Testing using Large Language Models. In: *IEEE Transactions on Software Engineering* (2025), 1–21. DOI: 10.1109/TSE.2025.3562025. https://www.jonbell.net/preprint/tse25-llmorpheus.pdf.

3. Silva, D., M. Gruber, S. Gokhale, E. Arteca, A. Turcotte, M. d'Amorim, W. Lam, S. Winter, and J. Bell. The Effects of Computational Resources on Flaky Tests. In: *IEEE Transactions on Software Engineering* (2024), 1–18. DOI: 10.1109/TSE.2024.3462251. https://www.jonbell.net/preprint/tse24-raft.pdf.

4. Hough, K. and J. Bell. A Practical Approach for Dynamic Taint Tracking with Control-flow Relationships. In: *ACM Transactions on Software Engineering and Methodology* **31**.(2) (2021). ISSN: 1049-331X. DOI: 10.1145/3485464. https://jonbell.net/publications/conflux.

5. Lam, W., S. Winter, A. Wei, T. Xie, D. Marinov, and J. Bell. A Large-Scale Longitudinal Study of Flaky Tests. In: **3**.(OOPSLA) (2020). Acceptance rate: 36%. https://jonbell.net/publications/oopsla20flaky.

6. Bell, J., C. Murphy, and G. Kaiser. Metamorphic Runtime Checking of Applications Without Test Oracles. In: **March** (2015). https://jonbell.net/publications/columbus.

Conferences

1. Fiotto-Kaufman, J. F., A. R. Loftus, E. Todd, J. Brinkmann, K. Pal, D. Troitskii, M. Ripa, A. Belfki, C. Rager, C. Juang, A. Mueller, S. Marks, A. S. Sharma, F. Lucchetti, N. Prakash, C. E. Brodley, A. Guha, J. Bell, B. C. Wallace, and D. Bau. NNsight and NDIF: Democratizing Access to Open-Weight Foundation Model Internals. In: *The Thirteenth International Conference on Learning Representations*. 2025. https://www.jonbell.net/preprint/iclr25.pdf.

2. Li, J., E. D. Mynatt, V. Mishra, and J. Bell. "Always Nice and Confident, Sometimes wrong": Developer's Experiences Engaging Generative AI Chatbots Versus Human-Powered Q&A Platforms. In: *Proceedings of The 28th ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing*. CSCW. 2025. DOI: 10.1145/3710927. https://www.jonbell.net/preprint/cscw25-chatgpt.pdf.

3. Alshammari, A., P. Ammann, M. Hilton, and J. Bell. 230,439 Test Failures Later: An Empirical Evaluation of Flaky Failure Classifiers. In: *Proceedings of the 2024 IEEE Conference on Software Testing, Validation and Verification*. ICST. Acceptance rate: 25%. 2024. https://www.jonbell.net/preprint/icst24-flaky-messages.pdf.

4. Hough, K. and J. Bell. Crossover in Parametric Fuzzing. In: *Proceedings of the 2024 International Conference on Software Engineering*. ICSE. 2024. https://www.jonbell.net/preprint/icse24-zeugma.pdf.

5. Kukucka, J., L. Pina, P. Ammann, and J. Bell. An Empirical Examination of Fuzzer Mutator Performance. In: *Proceedings of the 33rd ACM SIGSOFT International Symposium on Software Testing and Analysis*. ISSTA. Acceptance rate: 21%. 2024. https://www.jonbell.net/preprint/issta24-mutator.pdf.

6. Lincroft, G., M. Cho, M. Bazzaz, K. Hough, and J. Bell. Thirty-Three Years of Mathematicians and Software Engineers: A Case Study of Domain Expertise and Participation in Proof Assistant Ecosystems. In: *Proceedings of the 21st International Conference on Mining Software Repositories*. MSR. Acceptance rate: 29%. 2024. https://www.jonbell.net/preprint/msr24-proof-assistants.pdf.

7. Rahman, S., A. Massey, W. Lam, A. Shi, and J. Bell. Automatically Reproducing Timing-Dependent Flaky-Test Failures. In: *Proceedings of the 2024 IEEE Conference on Software Testing, Validation and Verification*. ICST. Acceptance rate: 25%. 2024. https://www.jonbell.net/preprint/icst24-flakerake.pdf.

8. Pinckney, D., F. Cassano, A. Guha, and J. Bell. A Large Scale Analysis of Semantic Versioning in NPM. In: *Proceedings of the 20th International Conference on Mining Software Repositories*. MSR. Acceptance rate: 36%. 2023. https://www.jonbell.net/preprint/msr23-npm.pdf.

9. Pinckney, D., F. Cassano, A. Guha, J. Bell, M. Culo, and T. Gamblin. Flexible and Optimal Dependency Management via Max-SMT. In: *Proceedings of the 2023 International Conference on Software Engineering*. ICSE. Acceptance rate: 26%. 2023. https://www.jonbell.net/preprint/icse23-maxnpm.pdf.

10. Kukucka, J., L. Pina, P. Ammann, and J. Bell. CONFETTI: Amplifying Concolic Guidance for Fuzzers. In: *Proceedings of the 2022 International Conference on Software Engineering*. ICSE. Acceptance rate: 26%. 2022. https://jonbell.net/publications/confetti.

11. Perretta, J., A. DeOrio, A. Guha, and J. Bell. On the Use of Mutation Analysis for Evaluating Student Test Suite Quality. In: *Proceedings of the 31st ACM SIGSOFT International Symposium on Software Testing and Analysis*. ISSTA. Acceptance rate: 27%. 2022. https://jonbell.net/publications/issta22mutants.

12. Winter, S., C. S. Timperley, B. Hermann, J. Cito, J. Bell, M. Hilton, and D. Beyer. A Retrospective Study of one Decade of Artifact Evaluations. In: *Proceedings of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*. ESEC/FSE. Acceptance rate: 25%. 2022. https://www.jonbell.net/preprint/fse22artifacts.pdf.

13. Alshammari, A., C. Morris, M. Hilton, and J. Bell. FlakeFlagger: Predicting Flakiness Without Rerunning Tests. In: *Proceedings of the 2021 International Conference on Software Engineering*. ICSE. Acceptance rate: 24%. 2021. `https://jonbell.net/publications/flakeflagger`.

14. Celik, A., P. Nie, M. Coley, A. Milicevic, J. Bell, and M. Gligoric. Experience Report: Debugging the Performance of Maven's Test Isolation. In: *Proceedings of the 2020 International Symposium on Software Testing and Analysis*. ISSTA. Acceptance rate: 26%. 2020. `https://jonbell.net/publications/maven-surefire`.

15. Hough, K., G. Welearegai, C. Hammer, and J. Bell. Revealing Injection Vulnerabilities by Leveraging Existing Tests. In: *Proceedings of the 2020 International Conference on Software Engineering*. ICSE. Acceptance rate: 21%. 2020. `https://jonbell.net/publications/rivulet`.

16. Shi, A., J. Bell, and D. Marinov. Mitigating the Effects of Flaky Tests on Mutation Testing. In: *Proceedings of the 2019 ACM SIGSOFT International Symposium on Software Testing and Analysis*. ISSTA 2019. Acceptance rate: 22%. 2019. `https://jonbell.net/publications/flakymutants`.

17. Arora, N., J. Bell, F. Ivancic, G. Kaiser, and B. Ray. Replay without Recording of Production Bugs for Service Oriented Applications. In: *33rd IEEE/ACM International Conference on Automated Software Engineering*. ASE 2018. Acceptance rate: 20%. 2018. `https://jonbell.net/publications/parikshan`.

18. Bell, J., O. Legunsen, M. Hilton, L. Eloussi, T. Yung, and D. Marinov. DeFlaker: Automatically Detecting Flaky Tests. In: *Proceedings of the 2018 International Conference on Software Engineering*. ICSE 2018. Acceptance rate: 21%. 2018. `https://jonbell.net/publications/deflaker`.

19. Bell, J. and L. Pina. CROCHET: Checkpoint and Rollback via Lightweight Heap Traversal on Stock JVMs. In: *Proceedings of the 2018 European Conference on Object-Oriented Programming*. ECOOP 2018. Acceptance rate: 39%. 2018. `https://jonbell.net/publications/crochet`.

20. Gambi, A., J. Bell, and A. Zeller. Practical Test Dependency Detection. In: *Proceedings of the 2018 IEEE Conference on Software Testing, Validation and Verification*. ICST 2018. Acceptance rate: 25%. 2018. `https://jonbell.net/publications/pradet`.

21. Hilton, M., J. Bell, and D. Marinov. A Large-Scale, Longitudinal Study of Test Coverage Evolution. In: *33rd IEEE/ACM International Conference on Automated Software Engineering*. ASE 2018. Acceptance rate: 20%. 2018. `https://jonbell.net/publications/coverage`.

22. Su, F.-H., J. Bell, K. Harvey, G. Kaiser, S. Sethumadhavan, and T. Jebara. Code Relatives: Detecting Similarly Behaving Software. In: *Proceedings of the 2016 ACM SIGSOFT International Symposium on the Foundations of Software Engineering*. FSE 2016. Acceptance rate: 30%. 2016. `https://jonbell.net/publications/dyclink`.

23. Su, F.-H., J. Bell, G. Kaiser, and S. Sethumadhavan. Identifying Functionally Similar Code in Complex Codebases. In: *Proceedings of the 24th IEEE International Conference on Program Comprehension*. ICPC 2016. Acceptance rate: 30%. **Distinguished Paper Award**. 2016. `https://jonbell.net/publications/hitoshiio`.

24. Bell, J., G. Kaiser, E. Melski, and M. Dattatreya. Efficient Dependency Detection for Safe Java Test Acceleration. In: *Proceedings of the 10th Join Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering*. ESEC/FSE 2015. 2015. `https://jonbell.net/publications/electrictest`.

25. Bell, J., E. Melski, M. Dattatreya, and G. Kaiser. Vroom: Faster Build Processes for Java. In: *IEEE Software*. Vol. Special Issue: Release Engineering, March/April 2015. IEEE Computer Society, 2015.

26. Viennot, N., M. Lecuyer, J. Bell, R. Geambasu, and J. Nieh. Synapse: A Microservices Architecture for Heterogeneous-Database Web Applications. In: *Proceedings of The 2015*

European Conference on Computer Systems (EuroSys). Acceptance rate: 21%. 2015. `https://jonbell.net/publications/synapse`.

27. Bell, J. and G. Kaiser. Phosphor: Illuminating Dynamic Data Flow in Off-The Shelf JVMs. In: *Proceeding of the 29th ACM SIGPLAN Conference on Object Oriented Programming Systems Languages and Applications*. OOPSLA 2014. Acceptance rate: 28%. Artifact accepted as meeting reviewer expectations. 2014. `https://jonbell.net/publications/phosphor`.

28. Bell, J. and G. Kaiser. Unit Test Virtualization with VMVM. In: *Proceedings of the 2014 International Conference on Software Engineering*. ICSE 2014. Acceptance rate: 20%. ACM SIGSOFT Distinguished Paper Award. 2014. `https://jonbell.net/publications/vmvm`.

29. Spahn, R., J. Bell, M. Lee, S. Bhamidipati, R. Geambasu, and G. Kaiser. Pebbles: Fine-Grained Data Management Abstractions for Modern Operating Systems. In: *Proceedings of the 11th USENIX Symposium on Operating Systems Design and Implementation*. OSDI 2014. Acceptance rate: 18.4%. 2014. `https://jonbell.net/publications/pebbles`.

30. Bell, J., N. Sarda, and G. Kaiser. Chronicler: Lightweight Recording to Reproduce Field Failures. In: *Proceedings of the 2013 International Conference on Software Engineering*. ICSE 2013. Acceptance rate: 18.5%. 2013. `https://jonbell.net/publications/chronicler`.

CS Education

1. Perretta, J., A. DeOrio, A. Guha, and J. Bell. Instructor-Written Hints as Automated Test Suite Quality Feedback. In: *Proceedings of the 56th ACM Technical Symposium on Computer Science Education*. SIGCSE. Acceptance rate: 33%. 2025. `https://www.jonbell.net/preprint/sigcse25-hints.pdf`.

2. Krusche, S., J. Bell, and B. Tenbergen. Software Engineering Education for the Next Generation: SEENG 2023 Workshop Report. In: *SIGSOFT Softw. Eng. Notes*. Vol. 48. 4. New York, NY, USA: Association for Computing Machinery, 2023, pp.66–69. DOI: `10.1145/3617946.3617959`. `https://www.jonbell.net/preprint/seeng23.pdf`.

3. Sheth, S., J. Bell, and G. Kaiser. A Competitive-Collaborative Approach for Introducing Software Engineering in a CS2 Class. In: *Proceedings of the 2013 Conference on Software Engineering Education and Training*. CSEET 2013. 2013. `https://jonbell.net/publications/cseet2013`.

4. Bell, J., S. Sheth, and G. Kaiser. Secret ninja testing with HALO software engineering. In: *Proceedings of the 4th international workshop on Social software engineering*. SSE '11. 2011. `https://jonbell.net/publications/halo-sse`.

5. Sheth, S., J. Bell, and G. Kaiser. HALO (Highly Addictive, sociaLly Optimized) Software Engineering. In: *Proceeding of the 1st international workshop on Games and software engineering*. GAS '11. 2011. `https://jonbell.net/publications/halo`.

Other Short Papers

1. Barr, E., J. Bell, M. Hilton, C. Timperley, and S. Mechtaev. Continuously Accelerating Research. In: *Proceedings of the 2023 International Conference on Software Engineering, New Ideas and Emerging Results*. ICSE NIER. Acceptance rate: 22%. 2023. `https://www.jonbell.net/preprint/icse23-nier.pdf`.

2. Pinckney, D., F. Cassano, A. Guha, and J. Bell. npm-follower: A Complete Dataset Tracking the NPM Ecosystem. In: *Proceedings of the 2023 ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*. ESEC/FSE. 2023. `https://www.jonbell.net/preprint/fse23-demo-npmfollower.pdf`.

3. Zhuang, B., J. Perretta, A. Guha, and J. Bell. A Tool for Mutation Analysis in Racket. In: *Proceedings of The 18th International Workshop on Mutation Analysis*. Mutation 2023. 2023. `https://www.jonbell.net/preprint/mutation23-racket.pdf`.

4. Su, F.-H., J. Bell, G. Kaiser, and B. Ray. Obfuscation Resilient Search through Executable Classification. In: *Proceedings of the 2nd ACM SIGPLAN International Workshop on Machine Learning and Programming Languages*. MAPL 2018. 2018. https://jonbell.net/publications/macneto.

5. Bell, J., T. D. LaToza, F. Baldmitsi, and A. Stavrou. Advancing Open Science with Version Control and Blockchains. In: *Proceedings of the 12th International Workshop on Software Engineering for Science*. SE4Science 2017. 2017. https://jonbell.net/publications/se4science.

6. Su, F.-H., J. Bell, and G. Kaiser. Challenges in Behavioral Code Clone Detection. In: *Proceedings of the 10th International Workshop on Software Clones*. IWSC 2016. 2016. https://jonbell.net/publications/iwsc16.

7. Bell, J. and G. Kaiser. Dynamic Taint Tracking for Java with Phosphor (Demo). In: *Proceedings of the 2015 International Symposium on Software Testing and Analysis*. ISSTA 2015. 2015. https://jonbell.net/publications/phosphor-demo.

8. Su, F.-H., J. Bell, C. Murphy, and G. Kaiser. Dynamic Inference of Likely Metamorphic Properties to Support Differential Testing. In: *Proceedings of the 10th International Workshop on Automation of Software Test*. AST 2015. 2015. https://jonbell.net/publications/mt-inference.

9. Bell, J. Detecting, Isolating and Enforcing Dependencies Between and Within Test Cases. In: *Proceedings of the 22nd ACM SIGSOFT International Symposium on Foundations of Software Engineering Doctoral Symposium*. SIGSOFT/FSE 2014. 2014. https://jonbell.net/publications/fse-docsym.

10. Bell, J. and G. Kaiser. VMVM: Unit Test Virtualization for Java (Formal Tool Demonstration). In: *Proceedings of the 2014 International Conference on Software Engineering*. ICSE 2014. Acceptance rate: 36%. 2014. https://jonbell.net/publications/vmvm-demo.

11. Bell, J., S. Sheth, and G. Kaiser. A Large-Scale, Longitudinal Study of User Profiles in World of Warcraft. In: *Proceedings of the 5th international workshop on web intelligence and communities*. WiC '13. 2013. https://jonbell.net/publications/wow.

Open Source Contributions A complete listing of my open source contributions is listed on my GitHub Profile, at https://github.com/jon-bell.

Selected contributions to popular projects:

Apache's Maven Surefire Plugin - this tool is used by all Java developers who run test cases through the popular Maven build system. Contributed: an option to rerun failing tests in JUnit5 to help combat flaky tests, an optimization to reduce time to execute tests in isolation by 20x.

Pitest mutation testing system for JVM - this tool is the state-of-the-art mutation analysis tool for Java and the JVM. Contributed: a faster, more precise coverage implementation

JQF Fuzzing Framework - this tool is the state-of-the-art property-guided fuzzing tool for java and the JVM. Contributed: a faster, collision-free coverage implementation.

Research Grants
1. "National Deep Inference Fabric for Very Large Language Models," PI: David Bau, co-PIs: Byron Wallace, Arjun Guha, Carla Brodley and Jonathan Bell (20% even split). Sponsor: National Science Foundation IIS-2408455. $8,993,038. 5/1/2024 - 4/30/2028

2. "Travel: NSF Student Travel Grant for 2024 ACM/IEEE International Conference on Software Engineering," PI: Jonathan Bell. Sponsor: National Science Foundation CCF-2413092. $30,000. To support student travel to ICSE and the SE mentoring workshop.3/1/2024 - 11/30/2024

3. "Collaborative Research: RAPID: Virtual Conference Platform," PI: Jonathan Bell, collaborative with PIs Crista Lopes (UC Irvine) and Benjamin Pierce (Penn). Sponsor: National Science Foundation CCF-2035003. $159,986 across all collaborators, my share $30,208. To rapidly develop software to support virtual conferences in response to COVID-19.07/01/2020 - 05/31/2021

4. "NSF Student Travel Grant for 2019 ACM SIGPLAN Conference on Systems, Programming, Languages and Applications: Software for Humanity (SPLASH)," PI: Jonathan Bell. Sponsor: National Science Foundation CCF-1940760. $30,000. To support undergraduate student attendance at the PL/SE mentoring workshop.8/1/2019 - 1/31/2020

5. "CAREER: Amplifying Developer-Written Tests for Code Injection Vulnerability Detection," PI: Jonathan Bell. Sponsor: National Science Foundation CNS-2100015. $500,000. 5/1/2019 - 4/30/2024

6. "Enabling Testing and Dynamic Analysis Research at a Very Large Scale," PI: Jonathan Bell. Sponsor: Amazon Web Services . $8,000. Cloud credits to support research in continuous integration.12/1/2018 - 12/31/2019

7. "SHF: Medium: Collaborative Research: Enhancing Continuous Integration Testing for the Open-Source Ecosystem," PI: Jonathan Bell, also non-GMU PIs Darko Marinov (UIUC) and Lingming Zhang (UIUC). Sponsor: National Science Foundation CCF-2100037. $1.2m across all collaborators, my share $399,591. 10/1/2018 - 9/30/2023

8. "NSF Student Travel Grant for 2018 ACM SIGPLAN Conference on Systems, Programming, Languages and Applications: Software for Humanity (SPLASH)," PI: Jonathan Bell. Sponsor: National Science Foundation CCF-1838986. $30,000. To support undergraduate student attendance at the PL/SE mentoring workshop.8/1/2018 - 1/31/2019

9. "Science of Security Principles of Trustworthy Systems Design, Modeling and Analysis for Security and Privacy," PI: Jonathan Bell. Sponsor: National Security Agency . $250,000, sub-contract from Carnegie Mellon University's Science of Security Lablet. 5/1/2018 - 8/25/2020

INVITED TALKS   "Learning to Live with Flaky Tests," Adyen Tech Talk April 2022

"Catching more bugs with fewer false alarms," SPLASH keynote address upon acceptance of Dahl-Nygaard Junior Prize at ECOOP November 2020

"Catching more bugs with fewer false alarms," Carnegie Mellon University March 2020

"DeFlaker: Automatically Detecting Flaky Tests," Google Journal Club Paper Series April 2018

"Detecting and Debugging Flaky Tests," Swedish Association for Software Testing Quarterly Meeting April 2018

"Practical Dynamic Data Flow Analysis in the JVM," University of Maryland May 2017

"Practical Dynamic Data Flow Analysis in the JVM," Virginia Tech Arlington Campus March 2017

"Making Software More Reliable by Uncovering Hidden Dependencies," University of Washington November 2016

"Making Software More Reliable by Uncovering Hidden Dependencies," University of Delaware September 2016

"Making Software More Reliable by Uncovering Hidden Dependencies," IBM TJ Watson January 2016

"Faster, More Reliable Builds," University of Illinois at Urbana-Champaign December 2015

"Practical Dynamic Taint Tracking in the JVM," IBM Programming Languages Research Day November 2015

TEACHING   **Northeastern University**, Boston, MA USA

Spring 2026: "CS 3100: Program Design and Implementation 2" (Undergraduate).
https://neu-pdi.github.io/cs3100-public-resources/

Spring 2024: "CS 4530: Fundamentals of Software Engineering" (Undergraduate).
https://neu-se.github.io/CS4530-Spring-2024/

Spring 2023: "CS 4973/7580: Advanced Software Engineering" (Graduate/Advanced

Undergraduate).
https://neu-se.github.io/CS4910-7580-Spring-2023/

Fall 2022: "CS4530: Fundamentals of Software Engineering" (Undergraduate).
https://neu-se.github.io/CS4530-Fall-2022/

Spring 2022: "CS4530: Fundamentals of Software Engineering" (Undergraduate).
https://neu-se.github.io/CS4530-Spring-2022/

Fall 2021: "CS7580: Special Topics in Software Engineering" (Graduate).
https://neu-se.github.io/CS7580-Fall-2021/

Spring 2021: "CS4530: Fundamentals of Software Engineering" (Undergraduate).
https://neu-se.github.io/CS4530-CS5500-Spring-2021/

Fall 2020: "CS4530/CS5500: Fundamentals of Software Engineering" (Undergrad/MS).
https://neu-se.github.io/CS4530-CS5500-Fall2020/

George Mason University, Fairfax, VA USA
Fall 2019: "CS 475: Distributed and Concurrent Systems" (Undergraduate).
https://www.jonbell.net/gmu-cs-475-fall-2019/

Spring 2019: "CS 475: Distributed and Concurrent Systems" (Undergraduate).
https://www.jonbell.net/gmu-cs-475-spring-2019/

Fall 2018: "SWE 432: Web Application Development" (Undergraduate).
https://www.jonbell.net/swe-432-fall-2018-web-programming/

Spring 2018: "CS 475: Distributed and Concurrent Systems" (Undergraduate).
https://www.jonbell.net/gmu-cs-475-spring-2018/

Fall 2017: "SWE 795: Program Analysis for Software Testing" (Graduate).
https://www.jonbell.net/swe-795-fall-17-program-analysis-for-software-testing/

Spring 2017: "SWE 622: Distributed Software Engineering" (Graduate).
https://www.jonbell.net/swe-622-spring-2017/

Fall 2016: "SWE 432: Design and Implementation of Software for the Web" (Undergraduate).
https://www.jonbell.net/swe-432-fall-2016/

Professional and Research Experience	**Northeastern University**, Boston, MA USA	
	Associate Professor (with tenure), *Khoury College of Computer Sciences*	**2024 — Present**
	Assistant Professor, *Khoury College of Computer Sciences*	**2020 — 2024**
	Clowdr Cic, Bristol, United Kingdom	
	Co-Founder, *Non-Executive Director of the Board*	**2020 — 2022**
	George Mason University, Fairfax, VA USA	
	Assistant Professor, *Department of Computer Science*	**2016 — 2020**
	Electric Cloud, Inc, San Jose, CA USA	
	Consulting Research Scientist	**Summer 2014**
	Programming Systems Laboratory, **Columbia University**, New York, NY USA	
	Graduate Research Assistant	**2011 — 2016**

SERVICE

Conference/Professional Organization Leadership
  ACM SIGSOFT Open Science Initiative Co-Chair 2019
  Computing Research Association (CRA) Education Committee 2024, 2025, 2026
  ICSE Program Committee Area Chair (Testing and Analysis) 2026
  ICSE Review Process Co-Chair 2028
  ICSE Shadow PC Co-Chair 2026, 2027
  ICSE Student Mentoring Workshop Co-Chair 2022, 2024
  ICSE Student Mentoring Workshop Steering Committee 2024, 2025, 2026

ICSE Virtualization Technology Co-Chair 2020
ISSTA Program Committee Area Chair (Analysis and Testing for Security) 2026
ISSTA Publicity Co-Chair 2020
ISSTA Tools and Demos Track Co-Chair 2023
ISSTA Virtualization Chair 2020
PLDI Artifact PC Co-Chair 2020
SPLASH Posters Co-Chair 2017
SPLASH Publicity Co-Chair 2018
SPLASH Student Mentoring Workshop Co-Chair 2017, 2018, 2019, 2020
SPLASH Student Volunteer Co-Chair 2013, 2014, 2015
Workshop on Designing and Running Project-Based Courses in Software Engineering Education at ICSE Workshop Co-Organizer 2022
Workshop on Games and Software Engineering at ICSE Workshop Co-Organizer 2012
Workshop on Software Engineering Education for the Next Generation at ICSE Workshop Co-Organizer 2023

Conference Technical Program Committee Membership
Automated Software Engineering (ASE) 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Foundations of Software Engineering (ESEC/FSE) 2022, 2023, 2026
IEEE Secure Development Conference 2021
International Conference on Mining Software Repositories (MSR) 2020, 2024
International Conference on Program Comprehension (ICPC) 2023, 2024, 2026
International Conference on Software Engineering (ICSE) 2019, 2020, 2021, 2022, 2024, 2025
International Conference on Software Testing (ICST) 2019
International Symposium on Software Reliability Engineering (ISSRE) 2022
International Symposium on Software Testing and Analysis (ISSTA) 2021, 2022, 2023, 2024
Object-oriented Programming, Systems, Languages, and Applications (OOPSLA) 2024, 2025, 2026

Journal Reviewing
ACM Transactions on Software Engineering and Methodology 2020, 2021, 2022, 2023, 2024, 2025, 2026
Automated Software Engineering 2021
Empirical Software Engineering 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
IEEE Software 2017
IEEE Transactions on Reliability 2020
IEEE Transactions on Software Engineering 2020, 2021, 2022, 2023, 2024
Journal of Systems and Software 2016, 2017, 2018, 2019, 2020, 2021, 2022

Other Program Committee Activities
FSE Release Engineering Workshop 2016
FSE Software Defect Datasets Workshop 2023
ICSE Doctoral Symposium Committee 2024
ICSE New Ideas and Emerging Results 2023
ICSE Test Flakiness Workshop 2024, 2026
ICSE Workshops Program Committee 2023
ICSME Artifact Evaluation Committee 2017
ICSME Late Breaking Ideas Track 2019
ICST CI/CD Industry Workshop 2026
ICST Testing Tools Track 2016, 2020
ISSTA Artifact Evaluation Committee 2015
ISSTA Doctoral Symposium Committee 2022
ISSTA Tool Demonstrations Track 2021, 2022, 2023, 2024, 2025

MSR Mining Challenge Track 2017, 2018, 2020
OOPSLA Artifact Evaluation Committee 2015, 2016

Funding and Award Committee Activities
CRA-E Undergraduate Research Award Co-Chair 2024, 2025, 2026
CRA-E Undergraduate Research Award Committee 2021, 2022, 2023
Department of Energy Funding Panel 2021
ICSE Student Research Competition Judge 2019, 2020
National Science Foundation Grant Review Panel 2017, 2018, 2019, 2020, 2022, 2023, 2024, 2025

Northeastern University, Khoury College Committee Leadership
CAREER Club Faculty Lead 2023, 2024
Code4Community Student Group Faculty Advisor 2021, 2022
Faculty Mentoring and Engagement Co-Chair 2025
PhD CS Admissions Co-Chair 2023, 2024

Northeastern University, Committee Membership
Cadre of University Marshalls 2022, 2023, 2024, 2025, 2026
Faculty Engagement and Mentoring 2021, 2022
PhD CS Admissions 2021, 2022

George Mason University, CS Department Committee Membership
Computing 2016, 2017, 2018, 2019, 2020
MS in Software Engineering Admissions 2016, 2017, 2018, 2019, 2020
PhD Recruitment and Evaluation 2017, 2018, 2019, 2020
Student Run Computing & Technology Faculty Advisor 2018, 2019, 2020
Teaching Track Faculty Recruitment 2017, 2018, 2019
Tenure Track Faculty Recruitment 2018, 2019, 2020

Columbia University, CS Department Committee Leadership
Social Committee Chair 2011, 2012, 2013, 2014, 2015, 2016

Thesis
Committees

Committee Member:

Ellen Arteca, Northeastern PhD CS, advisor Frank Tip, "Leveraging large code bases for bug detection and test generation"

Alexi Turcotte, Northeastern PhD CS, advisor Frank Tip, "Optimizing Asynchronous JavaScript Applications"

Aviral Goel, Northeastern PhD CS, advisor Jan Vitek, "Non-intrusive migration of R ecosystem from lazy to strict semantics"

Thomas Lemberger, LMU Munich PhD CS, advisor Dirk Beyer, "Towards Cooperative Software Verification with Test Generation and Formal Verification"

Daniel Gaston, University of Delaware PhD CS, advisor James Clause, "Leveraging Similar Functionality to Find Missing Tests"

Gabriel Ferreira, CMU PhD CS, advisor Christian Käestner, "Towards Practical and Trustworthy Package Management"

Kesina Baral, GMU PhD IT, advisor Jeff Offutt, "Tools and Techniques to Support Developer Testing"

Sahar Mehrpour, GMU PhD CS, advisor Thomas LaToza, "Helping Developers Follow Design Decisions"

Abdulaziz Alaboudi, GMU PhD IT, advisor Thomas LaToza, "Supporting Developers Through Hypotheses-based Debugging Tools"

Chong Tang, UVA PhD CS, advisor Kevin Sullivan and Baishakhi Ray, "Improving System Performance via Design and Configuration Space Exploration"

David Gonzalez, GMU PhD IT, advisor Thomas LaToza, "Direct Manipulation of Code through Idiomatic Views"

Mentoring & Advising

Past Advisees

Gwenyth Lincroft (PhD), "CSCW for LLM Interpretability Research," 2022-Present.

Liam DeVoe (MS), "Revisiting Property-Based Testing with Typed Choice Sequences," 2023-2025.

Donald Pinckney (PhD), "Improving Dependency Management via Formal Semantics," Co-advised with Arjun Guha, 2023-2024.

Rajat Keshri (MS), "Autoscaling CI runners on existing scientific computing resources," Spring 2023.

Shubham Sonawane (MS), "Automated Reproducibilty for Software with External Dependencies," Spring 2023.

Justin Liu (BS), "Devops Tools for GitHub Actions Runners on Slurm," Fall 2022.

Bambi Zhang (BS), "Mutation Testing for Racket," 2022-2023.

Amanda Dupell (BS), "Accessibility Considerations and Testing for Virtual Conference Design," Spring 2022.

Ian McLaughlin (BS), "Performance Measurement of Cloud Container Services for Streaming Video," Fall 2021.

James Perretta (PhD), "Improving Tutoring and Evaluation of Software Testing in the Classroom," Co-advised with Arjun Guha, 2021-2025.

Katherine Hough (PhD), "Leveraging Dynamic Data Relationships to Amplify Software Tests," 2020-2024.

James Kukucka (PhD), "Evaluating and Improving Fuzzer Mutation Strategies," Co-advised with Paul Ammann since I left GMU, 2019-2025.

Abdulrahman Alshammari (PhD), "Detecting Test Flakiness Without Rerunning Tests," Co-advised with Paul Ammann since I left GMU, 2019-2024.

Aaron Massey (UG/MS), "Diagnosing and Reproducing Flaky Tests," 2019-2021.

Katherine Hough (UG/MS), "Amplifying Developer-Provided Tests to Detect Injection Vulnerabilities," Transitioned to PhD at Northeastern, 2019-2020.

Matthew Coley (UG), "Improving Maven's Flaky Test Detection," Matt's project was integrated into the Maven Surefire plugin, Summer 2019.

Sarah Alhozaimy (PhD), "Quantifying and Visualizing Changes in Code Coverage," 2018-2019.

Hayder Al Haddad (BS), "Detecting and Visualizing Changes in Code Coverage," Summer 2018.

Luís Pina (Postdoctoral Scholar), "JVM Systems for Intrusion Detection and Vulnerability Detection," Transitioned to Assistant Professor at University of Illinois (Chicago), 2017-2019.

Okhaifo Oikeh (MS), "Exploiting Dynamic Dataflow Information to Improve Software Testing," 2017-2018.

Jeffrey Currence (BS), "Mining API invocations in JavaScript," Co-advised with Thomas LaToza, Summer 2017.

Monica Jeyasankar (BS), "Detecting Code Relatives in JavaScript," Spring 2017.

Sravya Kalva (BS), "Detecting Code Relatives in JavaScript," Spring 2017.

Pakeezha Arfany (BS), "Detecting Code Relatives in JavaScript," Spring 2017.

Mandi Wang (MS), "Extending Test Suite Minimization," 2014-2015.

Emilia Pakulski (BS), "Automating Test Suite Minimization," Fall 2014.

Alana Ramjit (BS), "Optimizing Scala Test Suites," Fall 2014.

Jennifer Lam (BS), "Analyzing Regression Testing Practices in OSS," Spring 2014.

Xingzhou Derek He (BS), "Symbolic String Analysis for Java," 2014-2015.

Sidharth Shanker (BS), "Comparing test suite minimization techniques," Fall 2013.

Winnie Narang (MS), "Reproducing Java application field-failures with limited user information," Fall 2013.

Nikhil Sarda (MS), "Creating an efficient and robust Java in-vivo testing framework," Summer 2012.

Miriam Melnick (BS), "Detecting state-based metamorphic properties with in-vivo testing," Spring 2012.

Ethan Hann (MS), "Visualizing World of Warcraft player data," Spring 2012.

Alison Yang (BS), "Research notebook for genSpace," Spring 2012.

Jason Halpern (MS), "Understanding user retention in genSpace," Fall 2011.

Evgeny Fedetov (MS), "Towards social diversity in tool recommendations with genSpace," Summer 2011.

Aditya Bir (MS), "Managing complex datasets in genSpace," Spring 2011.