

Mattia Fazzini

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Minneapolis, MN 55455

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INTERESTS Software Engineering, Software Testing, Software Maintenance

My research aims to improve the overall quality of software. The central theme of my research is the development of techniques for software testing and maintenance.

EMPLOYMENT **University of Minnesota** 2019-Present
Assistant Professor
Department of Computer Science & Engineering

EDUCATION **Georgia Institute of Technology** 2013-2019
Ph.D., Computer Science
Advisor: Alessandro Orso

Politecnico di Milano 2010-2012
M.S., Engineering of Computing Systems

University of Illinois at Chicago 2010-2012
M.S., Computer Science
Double degree program with Politecnico di Milano

Politecnico di Torino 2010-2012
M.S., Computer Systems Engineering
Double degree program with Politecnico di Milano

University of Ferrara 2006-2009
B.S., Information Engineering

PUBLICATIONS **Conference Publications**

Artisan: An Action-Based Test Carving Tool for Android Apps

A. Gambi, M. Li, M. Fazzini

International Conference on Software Maintenance and Evolution (ICSME), Tool Demo Track, 2023
5 pages

Automatically Detecting Incompatible Android APIs

P. Liu, Y. Zhao, M. Fazzini, H. Cai, J. Grundy, L. Li

ACM Transactions on Software Engineering and Methodology (TOSEM), Journal Extension, 2023
29 pages

Action-Based Test Carving for Android Apps

A. Gambi, H. Gouni, D. Berreiter, V. Tymofyeyev and M. Fazzini

International Workshop on User Interface Test Automation and Testing Techniques for Event Based Software (INTUITESTBEDS), 2023

10 pages

Enhancing Mobile App Bug Reporting via Real-time Understanding of Reproduction Steps

M. Fazzini, K. Moran, C. Bernal-Cardenas, T. Wendland, A. Orso, D. Poshyvanyk

IEEE Transactions on Software Engineering (TSE), Journal First, 2022

26 pages

Automatically Detecting API-induced Compatibility Issues in Android Apps: A Comparative Analysis

P. Liu, Y. Zhao, H. Cai, M. Fazzini, J. Grundy, and L. Li

In Proceeding of the 31st International Symposium on Software Testing and Analysis (ISSTA), 2022

12 pages, 24.4% acceptance rate

Do Customized Android Frameworks Keep Pace with Android?

P. Liu, M. Fazzini, J. Grundy, and L. Li

In Proceedings of the 19th International Conference on Mining Software Repositories (MSR), 2022

12 pages, 34% acceptance rate

Characterizing Human Aspects in Reviews of COVID-19 Apps

M. Fazzini, H. Khalajzadeh, O. Haggag, Z. Li, H. Obie, C. Arora, W. Hussain, and J. Grundy

In Proceeding of the 9th IEEE/ACM International Conference on Mobile Software Engineering and Systems (MOBILESoft), 2022

12 pages, 40.9% acceptance rate

 *This paper won the ACM Distinguished Paper Award*

An Empirical Investigation into the Reproduction of Bug Reports for Android Apps

J. Johnson, J. Mahmud, T. Wendland, K. Moran, J. Rubin, and M. Fazzini

In Proceedings of the 29th edition of the IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), 2022

12 pages, 24.1% acceptance rate

Use of Test Doubles in Android Testing: An In-Depth Investigation

M. Fazzini, C. Choi, J. M. Copia, G. Lee, Y. Kakehi, A. Gorla, and A. Orso

In Proceedings of the 44th International Conference on Software Engineering (ICSE), 2022

13 pages, 26% acceptance rate

AndroR2: A Dataset of Manually-Reproduced Bug Reports for Android apps

T. Wendland, J. Sun, J. Mahmud, S. M. H. Mansur, S. Huang, K. Moran, J. Rubin and M. Fazzini

In Proceedings of the 18th Conference on Mining Software Repositories (MSR), Data Showcase Track, 2021

4 pages

Identifying and Characterizing Silently-Evolved Methods in the Android API

P. Liu, L. Li, Y. Yan, M. Fazzini, and J. Grundy.

In Proceedings of the 43rd International Conference on Software Engineering (ICSE), Software Engineering in Practice (SEIP) Track, 2021.

10 pages, 34% acceptance rate

A Framework for Automated Test Mocking of Mobile Apps

M. Fazzini, A. Gorla, and A. Orso.

In Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering (ASE), New Ideas and Emerging Results (NIER) track, 2020

4 pages

Managing App Testing Device Clouds: Issues and Opportunities

M. Fazzini, and A. Orso.

In Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering (ASE), Late Breaking Results (LBR) track, 2020

2 pages, 60% acceptance rate

APIMigrator: An API-Usage Migration Tool for Android Apps

M. Fazzini, Q. Xin, and A. Orso.

In Proceedings of the 6th International Conference on Mobile Software Engineering and Systems (MOBILESoft), Tool Demos and Mobile Apps track, 2020

4 pages, 71% acceptance rate

Automated API-usage update for Android apps

M. Fazzini, Q. Xin, and A. Orso

In Proceedings of the 28th ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), 2019

12 pages, 22.5% acceptance rate

Identifying Features of Android Apps from Execution Traces

Q. Xin, F. Behrang, M. Fazzini, and A. Orso

In Proceedings of the 6th International Conference on Mobile Software Engineering and Systems (MOBILESoft), Short Paper, 2019

5 pages

Automated Support for Mobile Application Testing and Maintenance

M. Fazzini

In Proceedings of the 12th Joint European Software Engineering Conference and the Symposium on the Foundations of Software Engineering (ESEC/FSE), Doctoral Symposium, 2018

4 pages, 19.1% acceptance rate

Enabling Refinable Cross-Host Attack Investigation with Efficient Data Flow Tagging and Tracking

Y. Ji, S. Lee, M. Fazzini, J. Allen, E. Downing, T. Kim, A. Orso, and W. Lee

In Proceedings of the 27th USENIX Conference on Security Symposium (USENIX Security), 2018

18 pages, 19.1% acceptance rate

Automatically Translating Bug Reports into Test Cases for Mobile Apps

M. Fazzini, M. Prammer, M. d'Amorim, and A. Orso

In Proceedings of the 27th ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), 2018

12 pages, 23.5% acceptance rate

RAIN: Refinable Attack Investigation with On-demand Inter-Process Information Flow Tracking

Y. Ji, S. Lee, E. Downing, W. Wang, M. Fazzini, T. Kim, A. Orso, and W. Lee

In Proceedings of the 2017 ACM SIGSAC Conference on Computer and Communications Security (CCS), 2017

14 pages, 18.1% acceptance rate

Automated Cross-Platform Inconsistency Detection for Mobile Apps

M. Fazzini and A. Orso

In Proceedings of the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE), 2017

11 pages, 24% acceptance rate

Barista: A Technique for Recording, Encoding, and Running Platform Independent Android Tests

M. Fazzini, E. N. D. A. Freitas, S. Roy Choudhary, and A. Orso

In Proceedings of the 2017 IEEE International Conference on Software Testing, Verification and Validation (ICST), 2017

12 pages, 26.7% acceptance rate

AutoCSP: Automatically Retrofitting CSP to Web Applications

M. Fazzini, P. Saxena, and A. Orso

In Proceedings of the 37th International Conference on Software Engineering (ICSE), 2015

11 pages, 18.5% acceptance rate

ViewPoints: Differential String Analysis for Discovering Client- and Server-Side Input Validation Inconsistencies

M. Alkhalaf, S. Roy Choudhary, M. Fazzini, T. Bultan, A. Orso, and C. Kruegel

In Proceedings of the 2012 International Symposium on Software Testing and Analysis (ISSTA), 2012

11 pages, 26% acceptance rate

**RESEARCH GRANTS
AND AWARDS**

Moka: Improving App Testing with Automated Mocking

Facebook, Inc.

PI: M. Fazzini

Co-PIs: A. Gorla (IMDEA Software Institute), A. Orso (Georgia Institute of Technology)

Awarded in October 2019, \$49, 838

SERVICE AWARDS

Distinguished Reviewer Award

International Conference on Automated Software Engineering (ASE), 2023).

TEACHING

CSCI 8980 Automated Software Engineering

Instructor

Fall 2023

CSCI 5802 Software Engineering II

Instructor

Spring 2022

CSCI 3081W Program Design and Development

Instructor

Fall 2021

CSCI 5802 Software Engineering II

Instructor

Spring 2021

CSCI 3081W Program Design and Development

Instructor

Fall 2020

CSCI 8980 Automated Software Engineering

Instructor

Spring 2020

CS 8803 Advanced Software Engineering

Teaching Assistant

Spring 2017

CS 6300 Software Development Process (Online)

Teaching Assistant

Summer 2016

CS 6300 Software Development Process (Online)

Teaching Assistant

Spring 2016

CS 6300 Software Development Process (Online)

Teaching Assistant

Fall 2015

CS 6300 Software Development Process (Online) Teaching Assistant	Summer 2015
CS 6300 Software Development Process (Online) Teaching Assistant	Spring 2015
CS 8803 Advanced Software Engineering Teaching Assistant	Fall 2014
CS 6300 Software Development Process (Online) Teaching Assistant	Fall 2014

MENTORING

Ph.D Students

Jack Johnson	Spring 2021-Present
Mengzhen Li	Fall 2021-Present

M.S. Students

Jared Lim	Fall 2021-Spring 2022
Tyler Wendland <i>Undergraduate thesis</i>	Fall 2019-Fall 2021
Jia Zhang	Fall 2020-Spring 2021
Chase Choi	Fall 2020-Spring 2021
Pranay Pratil	Fall 2019

Undergraduate Students

Hemant Gouni	Fall 2020-Spring 2022
Jack Lee	Fall 2021-Spring 2022
David Ha <i>Undergraduate thesis</i>	Fall 2021
Charlie Nazarian	Fall 2021
Emily Steinebrey <i>Undergraduate thesis</i>	Fall 2020
Gabriel Lee <i>Undergraduate thesis</i>	Fall 2020-Spring 2021
Andrew Lee	Fall 2020-Spring 2021
Muskan Bagati	Spring 2020
Martin Prammer	Fall 2017-Spring 2019
Anthony Teachey	Fall 2018

PROFESSIONAL ACTIVITIES

International Conference on Software Engineering (ICSE) ACM Student Research Competition (SRC) co-chair	2024
International Conference on Mobile Software Engineering and Systems (MOBILESoft) General co-chair	2023
International Conference on Software Engineering (ICSE) SCORE co-chair	2023
International Conference on Automated Software Engineering (ASE) Program committee member	2023

International Symposium on Software Testing and Analysis (ISSTA) Program committee member (Tool Demonstrations Track)	2023
IEEE Transactions on Software Engineering (TSE) Reviewer	2023
Empirical Software Engineering (EMSE) Reviewer	2023
Journal of Systems & Software Reviewer	2022
International Conference on Automated Software Engineering (ASE) Program Committee Member	2022
National Science Foundation (NSF) Panelist	2022
International Symposium on Software Testing and Analysis (ISSTA) Publicity chair	2022
International Symposium on Software Testing and Analysis (ISSTA) Program Committee Member (Tool Demonstrations Track)	2022
International Conference on Software Analysis, Evolution, and Reengineering (SANER) Program Committee Member (Early Research Achievements Track)	2022
International Conference on Mobile Software Engineering and Systems (MOBILESoft) Student Research Competition co-chair	2022
International Conference on Software Testing, Verification and Validation (ICST) Program Committee Member	2022
IEEE Transactions on Software Engineering (TSE) Reviewer (x2)	2022
ACM Transactions on Software Engineering and Methodology (TOSEM) Reviewer	2022
International Workshop on Advances in Mobile App Analysis (A-Mobile) Program Committee Member	2021
A-Test Workshop (A-Test) Program Committee Member	2021
International Conference on Mobile Software Engineering and Systems (MOBILESoft) Program co-chair	2021
ACM Transactions on Software Engineering and Methodology (TOSEM) Reviewer (x2)	2021
Empirical Software Engineering (EMSE) Reviewer (x4)	2021
Automated Software Engineering Journal (AUSE) Reviewer	2021
International Conference on Automated Software Engineering (ASE) Diversity co-chair	2021
International Conference on Automated Software Engineering (ASE) Program Committee Member	2021
International Conference on Automated Software Engineering (ASE) Program Committee Member (Tool Demonstrations Track)	2021

International Conference on Software Testing, Verification and Validation (ICST) Program Committee Member	2021
Empirical Software Engineering (EMSE) Reviewer	2020
Automated Software Engineering Journal (AUSE) Reviewer	2020
ACM Transactions on Software Engineering and Methodology (TOSEM) Reviewer	2020
Languages and Tools for Next Generation Testing Workshop (LANGETI) Program Committee Member	2020
Journal of Systems and Software (JSS) Reviewer	2020
IEEE Transactions on Software Engineering (TSE) Reviewer (x3)	2020
International Conference on Automated Software Engineering (ASE) Program Committee Member (Tool Demonstrations)	2020
International Symposium on Software Testing and Analysis (ISSTA) Student volunteer co-chair	2020
International Symposium on Software Testing and Analysis (ISSTA) Program Committee Member (Tool Demonstrations)	2020
International Conference on Mobile Software Engineering and Systems (MOBILESoft) Program Committee Member (Vision track)	2020
International Conference on Software Testing (ICST) Program Committee Member (Posters Track)	2020
International Symposium on Software Testing and Analysis (ISSTA) Artifact Evaluation Committee Member	2019
Automated Software Engineering Journal (AUSE) Reviewer	2019
Journal of Systems and Software Reviewer	2018
International Symposium on Software Testing and Analysis (ISSTA) Artifact Evaluation Committee Member	2018
International Symposium on Engineering Secure Software and Systems (ESSoS) Program Committee Member	2018
Transactions on Privacy and Security (TOPS) Reviewer	2016
International Conference on Information Systems Security (ICISS) Subreviewer	2015
INVITED TALKS AND PANELS	
Future challenges in mobile software engineering Panel, MOBILESoft 2020	2020
Automated Support for Testing and Maintenance of Mobile Applications Talk, A-Mobile	2019

Automated Support for Mobile Application Testing and Debugging Talk, Politecnico di Milano	2018
THEIA: Tagging and Tracking of Multi-Level Host Events for Transparent Computing and Information Assurance Talk, urdue University	2017
AutoCSP: Automatically Retrofitting CSP to Web Applications Talk, Politecnico di Milano	2015

**PROFESSIONAL
EXPERIENCE**

University of California, Berkeley, USA Research Internship Mentor: Dawn Song	Summer 2014
National University of Singapore, Singapore Research Internship Mentors: Abhik Roychoudhury and Prateek Saxena	Summer 2013
Georgia Institute of Technology, USA Research Scholar Mentor: Alessandro Orso	2012-2013
NTT DATA Corporation, Japan Research Internship Mentor: Yuji Shono	2009-2010
Bristol Centre for Complexity Sciences, England Research Internship Mentor: Mario Di Bernardo	Summer 2009