Danielle **Gonzalez**

PhD Candidate · Software Engineer

Center for Cybersecurity · Department of Software Engineering
Rochester Institute of Technology, NY, USA

dng2551@rit.edu | daniellegonzalez.github.io | daniellegonza | dngonza

Applying mixed empirical research methods towards building supportive tools & resources for developers, with a focus on security

Education

Rochester Institute of Technology — *Rochester, NY*
PhD in Software Engineering — *Exp. Graduation May 2021*

Rochester Institute of Technology — *Rochester, NY*
B.S. in Software Engineering — *2011–2016*
- GPA: 3.07

Funding

$88,000 Microsoft Research PhD Fellowship, 2019 - 2021

Service

2021 **PC Member** 18th International Conference on Mining Software Repositories — *[ICSE] MSR*
2020 **PC Member** 3rd International Workshop on Software Security from Design to Deployment — *[ESEC/FSE] SEAD*

Research Interests

Software Engineering · Software Testing · Secure Software Development · Human Factors in Software Engineering · Mining Software Repositories · Vulnerability Management

Publications

DeepTC-Enhancer: Improving the Readability of Automatically Generated Tests — *ASE 2020*
Devjeet Roy, Ziyi Zhang, Maggie Ma, Venera Arnaoudova, Annibale Panichella, Sebastiano Panichella, **Danielle Gonzalez**, Mehdi Mirakhorli
- Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering (ASE)

Did You Remember to Test Your Tokens? — *MSR 2020*
Danielle Gonzalez, Michael Rath, Mehdi Mirakhorli
- Proceedings of the 17th International Conference on Mining Software Repositories (MSR)

The State of the ML-universe: 10 Years of Artificial Intelligence & Machine Learning Software Development on GitHub — *MSR 2020*
Danielle Gonzalez, Nachiappan Nagappan, Thomas Zimmermann
- Proceedings of the 17th International Conference on Mining Software Repositories (MSR)

Automated Characterization of Software Vulnerabilities — *ICSME 2019*
Danielle Gonzalez, Holly Hastings, Mehdi Mirakhorli
- 2019 IEEE International Conference on Software Maintenance and Evolution (ICSME)

Architectural Security Weaknesses in Industrial Control Systems (ICS) an Empirical Study Based on Disclosed Software Vulnerabilities — *ICSA 2019*
Danielle Gonzalez, Fawaz Alhenaki, Mehdi Mirakhorli
- 2019 IEEE International Conference on Software Architecture (ICSA)

A Fine-Grained Approach for Automated Conversion of JUnit Assertions to English — *[ESEC/FSE] NL4SE 2018*
Danielle Gonzalez, Suzanne Prentice, Mehdi Mirakhorli
- 2018 Workshop on NLP for Software Engineering (NL4SE)

A Large-Scale Study on the Usage of Testing Patterns that Address Maintainability Attributes (Patterns for Ease of Modification, Diagnoses, and Comprehension) *MSR 2017*

Danielle Gonzalez, Joanna C.S. Santos, Andrew Popovich, Mehdi Mirakhorli, Mei Nagappan

- 2017 IEEE ACM International Conference on Mining Software Repositories (MSR)

TestEX: A Search Tool for Finding and Retrieving Example Unit Tests from Open Source Projects *ISSREW 2016*

Danielle Gonzalez, Andrew Popovich, Mehdi Mirakhorli

- 2016 IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW)

Automated Training-Set Creation for Software Architecture Traceability Problem *EMSE 2016*

Waleed Zogaan, Ibrahim Mujhid, Joanna C. S. Santos, **Danielle Gonzalez**, Mehdi Mirakhorli

- Empirical Software Engineering (2016) 22(3), pp 1028-1062

Experience

RIT Department of Software Engineering & Global Cybersecurity Institute *Rochester, NY*

Research Assistant *Sept 2015 - Present*

Advised by Dr. Mehdi Mirakhorli. I develop novel techniques/metrics or applications of existing techniques towards extracting *actionable* knowledge from large data sets, specifically vulnerability reports and open source repositories. The primary focus is developing empirically-validated resources for security unit testing and optimizing vulnerability management.

Microsoft Research *Remote*

Research Intern *June 2020 - September 2020*

Worked with Thomas Zimmermann and Patrice Godefroid to explore a security-focused application of anomaly detection for GitHub commits. Identified commit and repository metadata that could be mined and used to compute factors for a rule-based decision model, developed a Python tool that automates the entire data mining and analysis process, and conducted evaluations to gauge effectiveness. Collaborated with security researchers at GitHub throughout for subject-matter-expert feedback. Paper forthcoming.

Microsoft Research *Redmond, WA*

Research Intern *June 2019 - September 2019*

Worked with Thomas Zimmermann and Nachiappan Nagappan in the Software Analysis and Intelligence (SAINT) group to conduct a large scale mining & analysis study of GitHub repositories for tools and applied uses of machine learning and artificial intelligence software. Constructed a characterization and developed quantitative measurement techniques for studying developer collaboration and autonomy. Paper at MSR 2020

RIT Department of Software Engineering *Rochester, NY*

Teaching Assistant *Spring 2014, Fall 2015*

Spring 2014 assisted Dr. Andy Meneely with SWEN-250; Fall 2015 assisted Kenn Martinez with SWEN-261. Attended and assisted with all lectures introducing students to software engineering processes and graded project artifacts and assignments.

IDI Billing Solutions *Victor, NY*

Software Engineering Co-Op *Jan 2015 - Aug 2015*

Maintained and enhanced internal .NET/C# web application used for monitoring ongoing work items, improving database performance, writing unit tests, and working with QA for test automation.

Allstate Insurance *Northbrook, IL*

Application Architecture Intern *June 2014 - August 2014*

Produced a comprehensive analysis of AngularJS framework in regard to security and role-based authorization, gave direction and influence for architectural design decisions and development of best practices for the company, and developed multiple proof-of-concept applications.

RIT NSF-REU in Extremal Graph Theory and Dynamical Systems *Rochester, NY*

Research Assistant *June 2013 - August 2013*

Advised by Dr. Darren Narayan. Demonstrated applicability of betweeness centrality concepts for various graph structures such as the National Lambda Rail and MRI data. Developed novel formulas for calculating betweenness centrality in such structures. Findings were presented at the 2014 Joint Mathematics Meetings in Baltimore MD and published in the *Bulletin of the Institute of Combinatorics and Its Applications*, Volume 72.