

David Porfirio

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RESEARCH INTERESTS

My goal is to make **programming socially interactive robots** easy and approachable for both professional and end-user human-robot interaction developers. To achieve my goal, I design a diverse set of **user interfaces for capturing developer intent**. Within these interfaces, some development techniques I use include **formal verification** to help developers incorporate robot social norms into their interaction programs, **program synthesis** to assist developers prototype interaction programs from scratch, and **program repair** to automatically fix inadequate interaction programs.

EDUCATION

PhD	University of Wisconsin–Madison (UW–Madison), Madison, WI, USA Computer Sciences	2018-2022
MSc	UW–Madison, Madison, WI, USA Computer Sciences	2016-2018
BS	University of Arizona (UA), Tucson, AZ, USA Double degree (hon) in computer science and physiology Minor in mathematics Summa cum laude	2011-2016

WORK & RESEARCH EXPERIENCE

NRC RAP Postdoctoral Fellow United States Naval Research Laboratory Advisor: Dr. Laura Hiatt	2022-Present
Doctoral Research UW–Madison Computer Sciences Department Committee: Drs. Bilge Mutlu, Aws Albarghouthi, Maya Cakmak, and Kevin Ponto	2016-2022
Research Intern Nokia Bell Labs, New Providence, NJ, USA (Virtual) Mentors: Drs. Martin Carroll, Kedar Namjoshi, Itai Segall	Summer 2021
Undergraduate Senior Thesis UA Department of Computer Science Advisor: Dr. John Kececioglu	2015-2016
Undergraduate Research UA Department of Computer Science Advisors: Drs. E. Fiona Bailey and Joanna Masel	2013-2014

REFEREED FULL PAPERS

Porfirio, D. , Stegner, L., Cakmak, M., Saupé, A., Albarghouthi, A., & Mutlu, B. (2021, May). Figaro: A Tabletop Authoring Environment for Human-Robot Interaction. In Proceedings of the 2021 Conference on Human Factors in Computing Systems (CHI) (pp. 1-15).	Acceptance rate: 26%
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Porfirio, D. , Saupé, A., Albarghouthi, A., & Mutlu, B. (2020, April). Transforming robot programs based on social context. In Proceedings of the 2020 conference on human factors in computing systems (CHI) (pp. 1-12).	Acceptance rate: 24%
Porfirio, D. , Fisher, E., Saupé, A., Albarghouthi, A., & Mutlu, B. (2019, October). Bodystorming human-robot interactions. In Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST) (pp. 479-491). ACM.	Acceptance rate: 24%
Porfirio, D. , Saupé, A., Albarghouthi, A., & Mutlu, B. (2018, October). Authoring and verifying human-robot interactions. In The 31st Annual ACM Symposium on User Interface Software and Technology (UIST) (pp. 75-86). ACM. Best Paper Award	Acceptance rate: 21%
Xiong, K., McEntee, J. P., Porfirio, D. J. , & Masel, J. (2017). Drift barriers to quality control when genes are expressed at different levels. <i>Genetics</i> , 205(1), 397-407.	Impact factor: 3.564
Shumway, K. R., Porfirio, D. J. , & Bailey, E. F. (2015). Phonation-related rate coding and recruitment in the genioglossus muscle. <i>Experimental brain research</i> , 233(7), 2133-2140.	Impact factor: 2.395

REFEREED SHORT PAPERS

Porfirio, D. , Cakmak, M., Saupé, A., Albarghouthi, A., & Mutlu, B. (2021, May). Interaction Templates: A Data-Driven Approach for Authoring Robot Programs. In 2021 12th Annual Workshop on Evaluation and Usability of Programming Languages and Tools (PLATEAU) (in press).	
Porfirio, D. , Saupé, A., Albarghouthi, A., & Mutlu, B. (2019, March). Computational Tools for Human-Robot Interaction Design. In 2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI) (pp. 733-735). IEEE.	Acceptance rate: 31%

FELLOWSHIPS, HONORS, AND AWARDS

Postdoctoral Research Award NRC Research Associateship Programs	2022-Present
Microsoft Dissertation Grant Awarded \$21,148 for dissertation research	2021
Cisco Graduate Student Fellowship Selected by the UW–Madison Computer Sciences Department	2021
Heidelberg Laureate Forum Invited to attend as a young researcher	2019
Best Paper Award UIST '18	2018
NSF Graduate Research Fellowship	2017-2022
Advanced Opportunity Fellowship Selected by the UW–Madison Computer Sciences Department	2016, 2020
Excellence in Undergraduate Research Award Selected by the UA Department of Computer Science	2016
Galileo Circle Scholar Selected by the UA Department of Computer Science	2015
National Hispanic Scholar Selected by the National Hispanic Recognition Program	2011

Dean's List with Distinction

Awarded during six semesters at UA

2011-2016

TEACHING EXPERIENCE

Grandparents University Instructor

Summers 2018-2019

Co-organized social robotics lecture and lab sessions for children and their grandparents.

Teaching Assistant, UA

Summer 2015

CSC 352, Systems Programming and Unix

Duties: holding office hours and grading programming assignments

Section Leader, UA

Fall 2014 - Spring 2015

CSC 245, Introduction to Discrete Structures

CSC 227, Program Design and Development

Duties: teaching lab sessions, holding office hours, and grading assignments

ACADEMIC SERVICES

Referee Service

2022 ACM Conference On Computer-Supported Cooperative Work And Social Computing

2022 ACM/IEEE International Conference on Human-Robot Interaction (HRI)

2022 ACM Conference on Human Factors in Computing Systems (CHI)

2021 ACM Symposium on User Interface Software and Technology (UIST)

2021 AAAI Artificial Intelligence for Human-Robot Interaction (AI-HRI) Fall Symposium Series

2021 ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Reports

2021 ACM/IEEE International Conference on Human-Robot Interaction PIONEERS Workshop

2020 ACM Transactions on Human-Robot Interaction (THRI)

2020 ACM/IEEE International Conference on Human-Robot Interaction Alt.HRI

Event Organization

2022 HRI Workshop—*Participatory Design and End-User Programming for Human-Robot Interaction*

TECHNICAL SKILLS

Programming

Python, Golang, Java, Javascript, HTML, CSS, C#, C

Tools, Libraries, and Frameworks

ROS, Z3 Theorem Prover, PRISM Model Checker, NuSMV Model Checker, LaTeX, Git, OpenCV, D3.js, Matplotlib

Robot Platforms

Softbank Pepper, Softbank Nao, Temi, iRobot Create 2

Software

Illustrator, Premiere, Photoshop, Unity, Office