Rafael Ferreira Toledo |

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Education

Ph.D. Candidate in Computer Science   **Expected Spring 2023**
University of Waterloo   *Waterloo, Canada*
Waterloo Formal Methods Research Group

M.S. in Systems and Computing   **Jul 2018**
Universidade Federal do Rio Grande do Norte   *Natal, Brazil*
Formal Methods and Languages Research Laboratory

B.E. in Control and Automation   **Jun 2016**
Instituto Federal Fluminense   *Campos dos Goytacazes, Brazil*
Sandwich-Graduation with associated courses at University of Ottawa, Canada.

Summary of Qualifications

○ Capable of designing and executing research methodologies and experiments for solving complex problems mostly related to comprehension of program analysis results and data visualization

○ Ability to communicate research findings in presentations and academic writing

○ C++ and JavaScript proficiency mostly applied to the development of research projects and the assessment of students' learning during Object-Oriented Programming courses

Research Experience

Ph.D. Research Assistant   **Sep 2018 – Present**
University of Waterloo
○ Design new methods and tools to use interactive graphical representation of the source code for supporting software maintenance tasks performed by engineers

MSc Research Assistant   **Jul 2016 – Jul 2018**
Universidade Federal do Rio Grande do Norte
○ Proposed algorithms to enable the search of candidate replacements for failed units of a self-healing web service composition

Undergraduate Research Assistant   **Apr 2014 – Nov 2015**
Instituto Federal Fluminense
○ Contributed to the compilation of a set of tools and practices to study the application of finite state machines and test-driven development for embedded systems modelling and verification

Undergraduate Researcher Assistant   **May – Aug 2013**
University of Ottawa
○ Contributed to the development of a user interface for monitoring the proximity detection provided by a robotic instrumented compliant wrist

Additional Experience

Instructional Apprentice   **Sept 2021 – present**
University of Waterloo

Instructor   **May – Aug 2021**
University of Waterloo

Teaching Assistant   **Sept 2018 – Apr 2021**
University of Waterloo

Languages

○ **Portuguese**: Native Speaker   ○ **English**: Bilingual Proficiency
○ **French**: Elementary Proficiency

Publications

○ "Applying Declarative Analysis to Software Product Line Models: An Industrial Study", R. Shahin, R. Hackman, **R. Toledo**, Ramesh S, JM Atlee, and M. Chechik. ACM/IEEE 24th International Conference on Model Driven Engineering Languages and Systems (MODELS) 2021.

○ "Interactive Graph Exploration for Comprehension of Static Analysis Results", **R. Toledo**. IEEE/ACM 43rd International Conference on Software Engineering: Companion Proceedings (ICSE-Companion) 2021.

○ "Self-healing of web service compositions: a specification rewriting approach.", **R. Toledo**, U. Da Costa, M. Musicante, and G. Vargas-Solar. International Journal of Web and Grid Services 16, no. 2 (2020): 172-199.

○ "TDD for Embedded Systems: A Basic Approach and Toolset.", R. Carvalho, H. Silva, **R. Toledo**, and M. Azevedo. arXiv preprint arXiv:1507.07969 (2015).

○ "Instrumented Compliant Wrist for Dexterous Robotic Interaction", P. Laferrière, P. Payeur, **R. Toledo**, Proceedings of the IEEE International. Symposium on Robotic and Sensors Environments (ROSE 2014), pp. 66-71, Timisoara, Romania, 16-18 Oct. 2014.

○ "An Integrated Vision-Guided Robotic System for Rapid Vehicle Inspection", R. Fareh, P. Payeur, D. Nakhaeinia, R. Macknojia, A. Chavez-Aragon, A.-M. Cretu, P. Laferrière, R. Laganière, **R. Toledo**. Proceedings of the IEEE International Systems Conference (SYSCON 2014), pp. 446-451, Ottawa, ON, 31 Mar. - 3 Apr. 2014 (Best Paper Award)