

Caio Batista de Melo

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Last updated on December 15th, 2023

Education

University of California, Irvine

Ph.D. in Computer Science, GPA: 3.9/4.0

Dissertation: Reasoning About Emergent Behaviors at Runtime

Advised by Prof. Nikil Dutt

Irvine, CA

Sep. 2018 – Jun. 2023

University of Brasília

M.Sc. in Computer Science, GPA: 4.6/5.0

Thesis: Characterization of Implied Scenarios as Families of Common Behavior

Advised by Prof. Genaína Rodrigues

Brasília, Brazil

Aug. 2017 – Aug. 2018

University of Brasília

B.Sc. in Computer Science, GPA: 3.7/5.0

Brasília, Brazil

Mar. 2012 – Jul. 2017

Fordham University

Visiting student, GPA: 3.8/4.0

New York, NY

Jul. 2015 – Aug. 2016

Academic Employment

North Carolina State University

Department of Computer Science, Assistant Teaching Professor

Raleigh, NC

Aug. 2023 – present

Teaching Experience

Instructor of Record

North Carolina State University

CSC 236, Computer Organization and Assembly Language for Computer Scientists

Fall '23, Spring '24

CSC 116, Introduction to Computing - Java

Fall '23, Spring '24

E 115, Introduction to Computing Environments

Spring '24

University of California, Irvine

ICS 45C, Programming in C/C++ as a Second Language

Fall '22

140 students, 8.21/9 overall evaluation (84% responses).

CS 145, Embedded Software

Spring '22

145 students, 7.93/9 overall evaluation (71% responses).

Teaching Assistant

University of California, Irvine

ICS 139W, Critical Writing

Spring '23

ICS 31, Intro to Programming

Fall '18 – Winter '22, Winter '23

University of Brasília

CIC 113913, Introduction to Computer Science

Spring '18

Undergraduate Tutor

University of Brasília

CIC 113913, Introduction to Computer Science

Fall '12 – Spring '14, Spring '16

CIC 116785, Objected Oriented Programming

Spring '14

Guest Lecturer.....

North Carolina State University

CSC 591/791, *Embedded/Real-Time Systems for Autonomous Driving with Machine Learning* Fall '23

Fordham University

CISC 6080, *Capstone Project in Data Science* Fall '18

Certificates, Training, and Awards.....

University of California, Irvine

- Certificate in Excellence in Engineering Communications (2022)
- Thank a Teacher Recipient (2020)
- Certificate in Teaching Excellence (2019)
- Certificate in Course Design (2019)
- Center for Integration of Research, Teaching and Learning (CIRTL) Associate Level (2019)
- Teaching Assistant Professional Development Program (2018)

Mentoring Experience

- UCI Undergraduate Research Opportunities Program Research Discovery Program (Winter '22 – Spring '22)
One of 25 campus-wide mentors, worked closely with 4 CS undergrads to help them get started in research.
- Kookmin University and UCI Global Research Experience in Artificial Intelligence Program (Winter '22)
Mentored 3 undergraduate exchange students from South Korea that participated in active research projects.
- UCI Certificate in Mentoring Excellence (2021)

Research Experience

University of California, Irvine

Center for Embedded and Cyber-physical Systems, Graduate Research Assistant Irvine, CA
Sep. 2018 – Jun. 2023

University of Brasília

Software Engineering Lab., Graduate Research Assistant Brasília, Brazil
Aug. 2017 – Aug. 2018
Software Engineering Lab., Undergraduate Research Assistant
Aug. 2016 – Jul. 2017

Fordham University

Lab. for Informatics and Data Mining, Undergraduate Research Assistant New York, NY
Jun. 2016 – Aug. 2016

Publications

Journal Articles.....

- [J4] Caio Batista de Melo, Marzieh Ashrafiamiri, Minjun Seo, Fadi Kurdahi, and Nikil Dutt. "SAFER: Safety Assurances For Emergent Behavior". In: *IEEE Design & Test* (2023), pp. 1–1. DOI: 10.1109/MDAT.2023.3324887.
- [J3] Caio Batista de Melo and Nikil Dutt. "LOCocAT: Low-Overhead Classification of CAN Bus Attack Types". In: *IEEE Embedded Systems Letters* (2023), pp. 1–1. DOI: 10.1109/LES.2023.3299217.
- [J2] Eberle A. Rambo, Bryan Donyanavard, Minjun Seo, Florian Maurer, Thawra M. Kadeed, Caio B. de Melo, Biswadip Maity, Anmol Surhonne, Andreas Herkersdorf, Fadi Kurdahi, Nikil D. Dutt, and Rolf Ernst. "The Self-Aware Information Processing Factory Paradigm for Mixed-Critical Multiprocessing". In: *IEEE Transactions on Emerging Topics in Computing* (2020). DOI: 10.1109/TETC.2020.3011663.
- [J1] Caio Batista de Melo, André Luiz Fernandes Caçado, and Genáina Nunes Rodrigues. "Characterization of Implied Scenarios as Families of Common Behavior". In: *Journal of Systems and Software* 158 (2019). DOI: 10.1016/J.JSS.2019.110425.

Peer-reviewed Conferences

- [C3] Nora Sperling, Alex Bendrick, Dominik Stöhrmann, Rolf Ernst, Bryan Donyanavard, Florian Maurer, Oliver Lenke, Anmol Surhonne, Andreas Herkersdorf, Walaa Amer, Caio Batista de Melo, Ping-Xiang Chen, Quang Anh Hoang, Rachid Karami, Biswadip Maity, Paul Nikolian, Mariam Rakka, Dongjoo Seo, Saehanseul Yi, Minjun Seo, Nikil D. Dutt, and Fadi J. Kurdahi. “Information Processing Factory 2.0 - Self-awareness for Autonomous Collaborative Systems”. In: *Design, Automation & Test in Europe Conference & Exhibition, DATE 2023, Antwerp, Belgium, April 17-19, 2023*. IEEE, 2023, pp. 1–6. DOI: 10.23919/DATE56975.2023.10137006.
- [C2] Eberle A. Rambo, Thawra Kadeed, Rolf Ernst, Minjun Seo, Fadi Kurdahi, Bryan Donyanavard, Caio Batista de Melo, Biswadip Maity, Kasra Moazzemi, Kenneth Stewart, Saehanseul Yi, Amir M. Rahmani, Nikil Dutt, Florian Maurer, Nguyen Anh Vu Doan, Anmol Surhonne, Thomas Wild, and Andreas Herkersdorf. “The Information Processing Factory: A Paradigm for Life Cycle Management of Dependable Systems”. In: *IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS'19)*. New York, NY, USA, Oct. 2019. DOI: 10.1145/3349567.3357391.
- [C1] Anna Poulakas, Alon Yoeli, Sebastian Deossa, Caio Batista de Melo, D. Frank Hsu, Dawn J. Adams, Cesarina Javier, and Anita V. Batisti. “WATSHERE: A Watson Cognitive System to Navigate Social/Health Resources for Public Schools”. In: *Global Business and Technology Association Conference (GBATA)*. Vienna, Austria, July 2017, pp. 813–823. ISBN: 1-932917-13-6.

Book Chapters

- [BC1] Bryan Donyanavard, Tiago Mück, Kasra Moazzemi, Biswadip Maity, Caio Batista de Melo, Kenneth Stewart, Saehanseul Yi, Amir M. Rahmani, and Nikil Dutt. “Reflecting on Self-Aware Systems-on-Chip”. In: *A Journey of Embedded and Cyber-Physical Systems*. Ed. by Jian-Jia Chen. Cham: Springer International Publishing, 2021, pp. 79–95. ISBN: 978-3-030-47487-4. DOI: 10.1007/978-3-030-47487-4_6.

Technical Reports

- [TR1] Eberle A. Rambo, Bryan Donyanavard, Minjun Seo, Florian Maurer, Thawra Kadeed, Caio B. de Melo, Biswadip Maity, Anmol Surhonne, Andreas Herkersdorf, Fadi J. Kurdahi, Nikil D. Dutt, and Rolf Ernst. *The Information Processing Factory: Organization, Terminology, and Definitions*. 2019. URL: <http://arxiv.org/abs/1907.01578>.

Presentations

- Caio Batista de Melo and Nikil Dutt, *LOCoCAT: Low-Overhead Classification of CAN Bus Attack Types*, 19th International Conference on Compilers, Architectures, and Synthesis for Embedded Systems (Late-Breaking Track), 2023
- Caio Batista de Melo, André Luiz Fernandes Caçado, and Genáina Nunes Rodrigues, *Characterization of Implied Scenarios as Families of Common Behavior*, 35th IEEE/ACM International Conference on Automated Software Engineering (Journal-First Track), 2020
- Kenneth Stewart, Caio Batista de Melo, Saehanseul Yi, and Nikil Dutt, *Self-Aware Systems-On-Chip*, 1st UCI/UCR/UPHF International Workshop on Cyber-Physical Systems and their Applications in Intelligent and Connected Transportation System (Poster), 2019
- Kenneth Stewart, Caio Batista de Melo, Saehanseul Yi, and Nikil Dutt, *Self-Aware Systems-On-Chip*, Richard Newton Young Fellow Forum at the 56th Design Automation Conference (Poster), 2019
- Kenneth Stewart, Caio Batista de Melo, Saehanseul Yi, and Nikil Dutt, *The Information Processing Factory*, Richard Newton Young Fellow Forum at the 56th Design Automation Conference (Poster), 2019
- Caio Batista de Melo and Genáina Rodrigues, *Implied Scenario Detection Oriented Dependability Analysis*, joint 23rd University of Brasília/14th Federal District Undergraduate Research Workshop (Poster), 2017

Academic Service

Peer Reviewer.....

- International Conference on Omni-layer Intelligent systems (COINS) 2023;
- International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS) 2019, 2021, 2022;
- Design, Automation and Test in Europe Conference (DATE) 2021, 2022;
- Asia and South Pacific Design Automation Conference (ASP-DAC) 2022;
- International Conference on VLSI Design (VLSID) 2021.

Committee Member.....

- Matt Morano, Development of Electronics and Simulations for the nEDM@SNS Experiment, PhD Defense, Department of Physics, NC State

Other Certificates, Honors, and Awards

- UCI Graduate Division Preparing for a Faculty Career Certificate (2022)
- Design and Automation Conference (DAC) A. Richard Newton Young Student Fellow (2019)
- UCI Dean's Award (2018–2019)
- Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES) Scholarship (2017–2018)
- Brazilian National Council for Scientific and Technological Development (CNPq) Scholarship (2016–2017)
- Fordham University's Student Ambassador at the International Conference on Cyber Security (2016)
- Institute of International Education (IIE) Brazil Scientific Mobility Program (2015–2016)

Skills

Programming Languages.....

- Python, C, C++, SQL, Java.

Spoken Languages.....

- Native fluency: English, Portuguese;
- Basic communication: Spanish.

Industry Experience

Meta

Network Planning, PhD Software Engineer Intern

Menlo Park, CA

Jun. 2022 – Sep. 2022

Google

CloudNet Control, Software Engineering Intern

Irvine, CA

Jun. 2021 – Sep. 2021

Google

Cloud CDN, Software Engineering Intern

Irvine, CA

Jun. 2020 – Sep. 2020

Cal/Amp

Information Security, IT/Product Security Intern

Irvine, CA

Jun. 2019 – Sep. 2019

University of Brasília

Computer Science Department, Java Development Intern

Brasília, Brazil

Feb. 2015 – Jul. 2015