Beatriz Souza

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Education

Apr 2023-now — **University of Stuttgart**, Germany
PhD in Computer Science
Advisor: Michael Pradel
Research Area: AI4SE, Execution, Program Analysis

Oct 2021-Feb 2023 — **Federal University of Pernambuco**, Brazil
Master's in Computer Science
Advisor: Marcelo d'Amorim
Thesis: Learning to Detect Text-Code Inconsistencies with Weak and Manual Supervision

May 2017-June 2021 — **Federal University of Campina Grande**, Brazil
Bachelor's in Computer Science
Advisor: Rohit Gheyi
Thesis: Most Higher Order Mutants are Useless for Method Level Operators

May 2013-Sept 2016 — **Federal Institute of Education, Science and Technology of Paraíba**, Brazil
High School with a Technical Degree in Computer Science
Advisor: Gustavo Vieira

Work Experience

2024 (Apr-July) — **Microsoft Research**, Redmond, WA, USA - Research intern
Mentor and Collaborator: Suman Nath and Chang Lou
Project: *runtime verification* of distributed systems.

2022 (July-Dec) — **SoftwareLab**, Stuttgart, Germany - Research intern
Advisor: Michael Pradel
Project: *LExecutor*, a learning-guided approach for executing arbitrary Python code snippets.

May 2020-Feb 2021 — **Lab Analytics**, Campina Grande, Brazil - Software Developer
Mentors: João Brunet and Nazareno Andrade
Projects: *Tá de Pé?* and *Monitor Cidadão*, which are web applications aiming to identify risks in Brazilian government contracts.

Nov 2019-Oct 2020 — **UFCG**, Campina Grande, Brazil - Research assistant
Advisor: Rohit Gheyi
Project: I Worked on a sound and lightweight technique, based on theorem proving using Z3, to identify equivalent, duplicate, and subsumed mutations.

Aug 2018-July 2019 — **SPLAB**, Campina Grande, Brazil - Research assistant
Advisor: Patrícia Machado
Project: I investigated the effectiveness of state-of-the-art tools that automatically generate test cases, such as Randoop and EvoSuite.

July 2016-Sept 2016 — **Papagaio**, João Pessoa, Brazil - Web Developer Intern
Mentor: Gustavo Vieira
Project: I participated in the development of an e-commerce platform for drug stores.

Aug 2015-July 2016 — **IFPB**, Cajazeiras, Brazil - Research assistant
Advisors: Gustavo Vieira and Wilza Moreira
Project: I worked on *Segundo Mendel*, a mobile application to help high school students to learn genetic concepts, such as Mendel's Laws.

Volunteer Service

- Student volunteer of the ASE 2020 conference.

Publications

ICSE'25	Treefix: Enabling Execution with a Tree of Prefixes. **Beatriz Souza** and Michael Pradel. *International Conference on Software Engineering*
FSE'25	ChangeGuard: Validating Code Changes via Pairwise Learning-Guided Execution. Lars Gröninger, **Beatriz Souza** and Michael Pradel. *Symposium on the Foundations of Software Engineering*
FSE'23	LExecutor: Learning-Guided Execution. **Beatriz Souza** and Michael Pradel. *Symposium on the Foundations of Software Engineering*
IST'21	Identifying Method-Level Mutation Subsumption Relations using Z3. Rohit Gheyi, Márcio Ribeiro, **Beatriz Souza**, Marcio Guimarães, Leo Fernandes, Marcelo d'Amorim, Vander Alves, Leopoldo Teixeira, Baldoino Fonseca. *Elsevier Information and Software Technology*
SBES'20	A Large Scale Study On the Effectiveness of Manual and Automatic Unit Test Generation. **Beatriz Souza** and Patrícia Machado. *Brazilian Symposium on Software Engineering*
SBES'20	A Lightweight Technique to Identify Equivalent Mutants. **Beatriz Souza** and Rohit Gheyi. *Brazilian Symposium on Software Engineering*
ASE'20	Identifying Mutation Subsumption Relations. **Beatriz Souza**. *International Conference on Automated Software Engineering*
SPLASH'19	Is Mutation Score a Fair Metric?. **Beatriz Souza**. *International Conference on Systems, Programming, Languages, and Applications: Software for Humanity*

Awards and Honors

- **Selected for the 12th Heidelberg Laureate Forum as a young researcher**.
- **ACM SIGSOFT Distinguished Paper Award at The Symposium on the Foundations of Software Engineering** (FSE'23) for the work *LExecutor: Learning-Guided Execution*.
- **Best paper at The Brazilian Symposium on Software Engineering** (SBES'20) for the work *A Large Scale Study On the Effectiveness of Manual and Automatic Unit Test Generation*.
- **First Place at The Undergraduate Research on Software Engineering Competition** (SBES'20) for the work *A Lightweight Technique to Identify Equivalent Mutants*.
- **Third Place at The ACM Student Research Competition** (ASE'20) for the work *Identifying Mutation Subsumption Relations*.
- **Third Place at The ACM Student Research Competition** (SPLASH'19) for the work *Is Mutation Score a Fair Metric?*.

Teaching Experience

Oct 2024-Mar 2025 Apr 2023-Sept 2023	**Teaching assistant** at SOLA, Stuttgart, Germany Programming Paradigms - I created and graded exercise lists and addressed questions for a class of 80+ students.
Mar 2018-Aug 2018	**Teaching assistant** at UFCG, Campina Grande, Brazil Mathematical Foundations for Computer Science - I helped professor by grading exercise lists and addressing questions for a class of 46 students.
July 2015-Dec 2015	**Teaching assistant** at IFPB, Cajazeiras, Brazil Competitive Programming - I collaborated in a course to prepare high school and undergraduate students for programming contests using C as programming language.

Mentoring

Bachelor theses Aleksis Vezenkov. Performance-Improving Refactorings for Python. 2025
Master theses Lars Gröninger. Reasoning about Code Changes via Pairwise Learning-Guided Execution. 2024