Beatriz Souza

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Education

Master's in Computer Science   October 2021 - present
Federal University of Pernambuco

Bachelor's in Computer Science   May 2017 - June 2021
Federal University of Campina Grande

High School with a Technical Degree in Computing   May 2013 - September 2016
Federal Institute of Education, Science and Technology of Paraíba

Extracurricular Activities

Data Scientist and Software Developer   May 2020 - February 2021
Analytics Laboratory, Campina Grande, PB, Brazil
Worked on web applications using machine learning to identify risks in Brazilian government contracts.

Researcher in mutation testing and theorem proving   November 2019 - October 2020
Federal University of Campina Grande, Campina Grande, PB, Brazil
Worked on a sound and lightweight technique, based on theorem proving using Z3, to identify equivalent, duplicate, and subsumed mutations. This work generated three publications: an extended abstract entitled *Identifying Mutation Subsumption Relations*, ranked third best work in the Student Research Competition at ASE '20; a full paper entitled *A Lightweight Technique to Identify Equivalent Mutants*, ranked best undergraduate research work in software engineering in Brazil in the Student Research Competition at CBSoft '20; and a journal article entitled *Identifying Method-Level Mutation Subsumption Relations using Z3*, accepted to the Information and Software Technology journal.

Researcher in software testing and empirical software engineering   August 2018 - July 2019
Software Practices Laboratory, Campina Grande, PB, Brazil
Conducted a large experiment to investigate the effectiveness of state-of-the-art tools that automatically generate test cases, such as Randoop and EvoSuite, through Mutation Testing, using Pitest. This work generated two publications: an extended abstract entitled *Is Mutation Score a Fair Metric?*, ranked third best work in the Student Research Competition at SPLASH '19; and a full paper entitled *A Large Scale Study On the Effectiveness of Manual and Automatic Unit Test Generation*, ranked best paper at the Brazilian Symposium on Software Engineering (SBES '20).

Teacher Assistant (Mathematical Foundations for Computer Science)   March 2018 - August 2018
Federal University of Campina Grande, Campina Grande, PB, Brazil
Helped professor by correcting exercise lists and addressing questions for a class of 46 students.

Web Developer Intern   July 2016 - September 2016
Papagaio, João Pessoa, PB, Brazil
Participated in the development of an e-commerce platform for drug stores. Integrated the front-end with the back-end of the system, using Python and Django as the main tools.

Researcher in genetics, mobile development and accessibility   August 2015 - July 2016
IFPB, Cajazeiras, PB, Brazil
Worked in a team to build computational tools to help a student with disabilities to learn the genetic concepts, such as Mendel's Laws. I learned how to build a mobile application from scratch, to collaborate and to work with people with different backgrounds. The result of this work was an interactive learning game, called **Segundo Mendel** (According to Mendel), that helped the aforementioned student and was made widely available for high schoolers. Presented at SBPC in 2016 and published in 2018 as a book chapter. Downloaded more than 10,000 times and evaluated as 4.8/5 at Google Play.

Teacher Assistant   July 2015 - December 2015
IFPB, Cajazeiras, PB, Brazil
Collaborated in a course to prepare high school and undergraduate students for programming contests using C as programming language.

Awards

- 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 (CBSoft '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?*.

Technical Skills

- **Natural Languages:** Portuguese (Native), English (Advanced), Spanish (Basic understanding).
- **Programming Languages:** Python, Java, C, R (2+ years). Haskell, Prolog, JavaScript (6 months).
- **Testing related tools:** JUnit, Randoop, EvoSuite, Pitest, SpotBugs, PMD, PICT.
- **SMT Solver:** Z3.

Publications

Journal Paper

Rohit Gheyi, Márcio Ribeiro, Beatriz Souza, Marcio Guimarães, Leo Fernandes, Marcelo d'Amorim, Vander Alves, Leopoldo Teixeira, Baldoino Fonseca. Identifying Method-Level Mutation Subsumption Relations using Z3. In Information and Software Technology. November 2020.

Conference Papers

Beatriz Souza and Patrícia Machado. A Large Scale Study On the Effectiveness of Manual and Automatic Unit Test Generation. In 34th Brazilian Symposium on Software Engineering (SBES '20). October 21–23, 2020, Natal, Brazil.

Beatriz Souza and Rohit Gheyi. A Lightweight Technique to Identify Equivalent Mutants. In 11th Brazilian Conference on Software: Practice and Theory (CBSoft '20). October 21–23, 2020, Natal, Brazil.

Conference Extended Abstracts

Beatriz Souza. Identifying Mutation Subsumption Relations. In 35th IEEE/ACM International Conference on Automated Software Engineering (ASE '20), September 21–25, 2020, Virtual Event, Australia.

Beatriz Souza. Is Mutation Score a Fair Metric?. In Proceedings Companion of the 2019 ACM SIGPLAN International Conference on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH '19), October 20-25, 2019, Athens, Greece.

Beatriz Souza, Fernanda Vieira, Emídio José, Wilza Moreira, Gustavo Soares. Development of application to assist the learning of Mendel's Laws. In 68th annual meeting of Brazilian society for the progress of science (SBPC '16), July 03-09, 2016, Porto Seguro, Brazil.

Volunteer Service

- Student volunteer of the ASE 2020 conference.