

Samuel da Silva Feitosa

Chapecó - SC, Brazil

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Personal Profile

A Software Engineer, Lecturer, and Researcher with a M.Sc. and a Ph.D. in the programming languages field. With a strong background on software development, experience in steering projects, and passionate on guiding less experienced developers. Looking primarily for a Software Engineer / Developer role.

Over the course of my professional life, as Software Engineer, I have attained significant experience coding with a variety of programming languages, such as C++, Java, and Haskell working directly with corporate leadership and clients, and steering projects.

From the last few years until now, I dedicated myself as a Lecturer and Researcher at Federal Universities. I have obtained a Master Degree and a Ph.D. on the field of programming languages, where I used Haskell and Agda as main tools to specify, implement, test and prove properties of some languages.

I considered myself a fast and passionate learner, using the challenges as the source motivation.

Some projects: github.com/sfeitosa | github.com/fjpub | github.com/fjqquantum

Interests

Development of backend tools

All my career was built on the development of tools to help other developers to achieve the desired results. My work developing drivers, middleware and Linux services in C++, Java and Perl made me passionate for this kind of task.

Functional Programming

Since 2014, I am using Functional Programming to implement interpreters, compilers and random program generators. Haskell is an amazing tool for that kind of job, since it allows the encoding of interpreters and type-checkers by a direct translation between formal rules to Haskell code.

Linux

I've been using (and developing for) Linux since my bachelor degree. Being able to work as a Linux developer made me a better programmer, learning several techniques, ways to organize projects, and how to integrate software.

Technical Writing

As a researcher I have written several papers, as a way to share the acquired knowledge on the different subjects.

Teaching and Lecturing

I love teaching about computer programming. During the last years I was able to help forming several students / professionals, which are having success on their own careers as software developers. Nowadays, I am also the coach of the teams that attend the competitive programming contests.

Education

Federal University of Pelotas

Ph.D. in Computer Science

Pelotas - RS, Brazil

Sept 2016 - 2019

- Part of the research was conducted at the Utrecht University in Utrecht, NL.
- **Thesis:** Strategies for Testing and Formalizing Properties of Modern Programming Languages.

Federal University of Santa Maria

M.Sc. in Computer Science

Santa Maria - RS, Brazil

2014 - 2016

- **Thesis:** A Quantum Object Oriented Programming Language Based on Featherweight Java.

Unochapecó

B.Sc. in Computer Science

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2003 - 2007

- **Thesis:** Using evolutionary computation for the Timetable problem.

Skills

Programming	C/C++, Java, Haskell, Agda, Python, HTML/CSS, JavaScript, SQL.
Miscellaneous	Linux, Shell, \LaTeX , Markdown, Git.
Management	Head of development team, Head of informatics department.
Soft Skills	Time Management, Teamwork, Problem-solving, Engaging Presentation, Fast learning.

Languages

English	Professional proficiency
Portuguese	Native proficiency
Spanish	Intermediate

Experience

SIG Information Systems

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Software Engineer

3 years

- Collaborated with a four-person team to develop middleware to integrate a legacy information system with equipments and external software. When I started at this company, I was a Junior Developer, and when I left the company I was the team developer leader. Next I'll describe the two most relevant software I helped developing and maintaining.
 - **ECFSuite**: a suite of proprietary software that includes communication with the legacy system via named pipes, client-server architecture, and development of drivers for tax printers via direct communication with the devices on the Linux environment. The code was mostly developed in C++, with a small part in Perl.
 - **GWTEF**: another middleware to enable the communication of the legacy system with systems and equipments for electronic transference of funds (payment with credit and debit cards). The communication with the system was also via named pipes, and the client-server architecture used sockets directly.
- At this company I also worked on other small projects, developing tools to assist the needs of the main product.
- **Technical Skills**: C++, Perl, Java, Linux, Linux tools and libraries, Version control.
- **Soft Skills**: Teamwork, Time Management, Communication, Leading teams.

BeanWeb Solutions

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Head of Development

4 years

- BeanWeb Solutions was a startup company of which I was a partner. I had the role of Head of Product Development. I kept this role until the startup was sold, leading a team with 2 to 3 developers during that time. Next I'll cite the most relevant projects we developed.
 - **BWAuthorizer**: a client-server authorizer to control accesses of different sources. Developed mostly in C++, persisting data to a postgres database, and with a reporting tool developed in Java.
 - **BWWebManager**: a plugin to the Squid proxy to filter and authorize access to websites through a rule-based system, which provided easy-to-use interfaces to control a Linux server.
 - **BWFirewall**: a user-space software which communicate the kernel part of iptables through the libnetfilter_queue library. Also provided an easy-to-use interface to control a Linux Firewall.
 - **BWorkControl**: a Windows application used to monitor workstations, registering the activities a person performed in a computer. It was developed in C++, persisting data to a SQLite local database. We also developed an integration system to replicate the rules and monitoring logs between the workstations and the server.
- I was the co-author of projects which were contemplated to receive funds to create and develop the startup.
- **Technical Skills**: C++, Java, HTML/CSS/Javascript, Linux tools and libraries, Windows, Version control, PostgreSQL, and SQLite.
- **Soft Skills**: Leadership, Time Management, Communication.

Several Companies

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Consultant

2 years

- During my Master Degree Course I worked as a consultant for different companies, assisting the development of software in the C/C++ language.
- **Technical Skills**: C/C++.
- **Soft Skills**: Leadership, Communication.

Federal University of the South Fronteir and Federal Institute of Santa Catarina

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Lecturer and Researcher

4 years

- Teaching subjects about theoretical computer science and programming languages.
- Coaching the competitive programming teams.
- **Technical Skills**: C/C++, Java, Haskell.
- **Soft Skills**: Team management, Communication, Problem-solving, Creativity, Multi-tasking.

Research Projects

FJQuantum - A quantum object-oriented language

Santa Maria - RS, BR

Federal University of Santa Maria

Mar 2014 - Mar 2016

- As my Master Degree Project I developed a formal specification of a monadic semantics for quantum computing in Featherweight Java.
- To test the semantics, I developed a Haskell interpreter for the proposed language.
- I published some papers with the results. Among the most important are:
 - A monadic semantics for quantum computing in an object oriented language: <https://www.sciencedirect.com/science/article/abs/pii/S0167642318300844>.
 - FJQuantum – A Quantum Object Oriented Language: <https://www.sciencedirect.com/science/article/pii/S1571066116300512>.
- The source-code of this project can be found at: <https://github.com/fjquantum/master>.
- **Technical Skills:** Haskell, Formal semantics, Quantum computing, LaTeX.
- **Soft Skills:** Time Management, Presentation skills, Report writing.

Interpreters, Random Code Generation, and Formal Proofs

Pelotas - RS, BR / Utrecht, NL

Federal University of Pelotas

Mar 2016 - Dec 2019

- During part of my Ph.D. in Brazil I worked with Haskell to develop Interpreters and Random Generators for Featherweight Java and variants.
- During the other part of my Ph.D. I worked at the Utrecht University using Haskell and Agda to test and certify properties of Featherweight Java and variants.
- I published several papers with the results. Among the most important are:
 - A type-directed algorithm to generate random well-typed Java 8 programs: <https://www.sciencedirect.com/science/article/abs/pii/S0167642320301039>.
 - An Inherently-Typed Formalization for Featherweight Java: <https://dl.acm.org/doi/10.1145/3355378.3355385>.
- The source-code developed on this project can be found at: <https://github.com/fjpub>.
- **Technical Skills:** Haskell, Agda, Formal Specification, LaTeX.
- **Soft Skills:** Time Management, Presentation skills, Report writing.

Java Random Generator

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Federal University of South Frontier and Federal Institute of Santa Catarina

Mai 2020 - current

- A research project where my undergrad students and I developed a Java Random Generator, extending the work I conducted on my Ph.D. research.
- We published a paper with the results of this paper.
 - Synthesis of Random Real-World Java Programs from Preexisting Libraries: <https://dl.acm.org/doi/10.1145/3475061.3475087>.
- **Technical Skills:** Java, Formal Semantics, Git.
- **Soft Skills:** Report writing, Teaching.

Other Collaborations

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Federal University of South Frontier

Jun 2021 - current

- The last years I have collaborated in several other projects:
 - Open transactional actions: interacting with non-transactional resources in STM Haskell (Haskell Symposium 2022).
 - A Sound Strategy to Compile General Recursion into Finite Depth Pattern Matching (SBMF 2022).
 - An intrinsically-typed solution for the list-machine benchmark (COLA 2021).
 - The Design of a Verified Derivative-Based Parsing Tool for Regular Expressions (CLEI 2021).
 - Towards Typed Semantics for Parsing Expression Grammars (SBLP 2019).
 - Models of Artificial Intelligence and Machine Learning applied in the context of COVID-19.
- **Technical Skills:** Haskell, Agda, Lambda Calculus, Python, Machine Learning and Deep Learning.
- **Soft Skills:** Report writing, Team Work.

References available upon request.