

HANNELI TAVANTE

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*10+ years of software development / software engineering - C, C++, Ruby, Java, Python, Haskell, Rust.
Passionate about Programming Languages (PL), compilers and Formal Verification.*

EDUCATION

McGill University (Canada)	<i>Graduate Student (MSc) - Computer Science</i>	<i>2020-2022</i>
Thesis: <i>A Type-safe HDL Verified in Coq</i>		
Universidade Federal de Itajubá (Brazil)	<i>Master's Degree - Electrical Engineering</i>	<i>2018 - 2019</i>
Thesis: <i>A Haskell Implementation of THTA - Functional Programming Applied to Electrical Engineering</i>		
Universidade Federal de Itajubá (Brazil)	<i>Bachelor's Degree - Computer Engineering</i>	<i>2007 - 2011</i>

KEYWORDS

C++, Cloud Solutions, Software Engineering, Algorithms, Formal Verification, Static Analysis, Symbolic Execution.

INDUSTRY EXPERIENCE

Intel - *Compilers and Tools Engineer* *May 2022 (Grad Intern) - Oct 2022 - present*
- Tools for p4 programs; automatic test generation tool in C++ with SMT Solvers (Z3).
- Algorithms for program path exploration strategies.

Independent Senior Consultant *Aug 2017 - Apr 2022*
- Short-term contracts for multiple worldwide startups.
- Build APIs, Big Data, NoSQL, Data Science, Data Engineering, devops; functional Programming and Machine Learning projects.
- Selected projects and customers: ECoStage and IEMA (2018), ETS (2019), Quanto (2019), Datopian and CKAN (2020), GSquad/Mission (2021).

Codeminer42 - *Senior Developer and Team Leader* *June 2014 - Apr 2017*
- Manage and organise worldwide teams, helping them with technical issues.
- Main consulting areas: data analysis, data engineering, integration, database connectors, management of frameworks and libraries, implementation of performance tests, devops.

Red Hat - *Middleware Consultant* *Oct 2013 - May 2014*
- Customer relations, propose middleware Java solutions. Propose and manage workshops about Red Hat products for customers and co-workers.
- Understand and interact with sales and business environment, revise sales proposals and solutions.

Top Free Games - *Developer* *Nov 2012 - Oct 2013*
- Build cloud solutions with Heroku and Amazon AWS to increase backend systems performance. Monitor systems availability and performance, create auto-scalable systems, collect and analyze real time data with Cassandra, Kafka and Hadoop. Develop native apps for iOS.

Caelum - *Developer and Instructor* *Aug 2011 - Oct 2012*
- Provide training sessions for in-company's training programs. Assist the students continuously, providing them with information about the IT career and best architecture practices.
- Develop new training programs and improve the existing ones.

SOA—Expert - *Intern and Developer* *Feb 2011 - Jul 2011*
- Propose and build internal system architectures.
- SOA consulting, enterprise integration solutions.

B2ML Systems - *Intern and Developer* *Jan 2010 - Jan 2011*
- Java Development (frontend and backend applications).

RESEARCH AND DEVELOPMENT EXPERIENCE

McGill University - *Integrated Microsystems Laboratory*

June 2021 - present

Contributions: start a new research project focusing on formal verification of circuits using the Coq proof assistant. Discuss other existing strategies for formal verification of circuits (i.e. SMT solvers); compare existing HLS solutions; integrate results with ongoing Assertion Based Verification projects.

McGill University - *Learn-OCaml Project*

Jan 2020 - Apr 2021

Contribution: Data collection and data analysis of online programming environments in functional programming.

Universidade Federal de Itajubá - *aPTIs-SG2 - Smart Grids Laboratory*

Feb 2018 - Dec 2019

Contribution: Implement reliable solutions for electromagnetic transient analysis algorithms.

Universidade Federal de Itajubá - *Secure Cloud*

Mar 2018 - Apr 2019

Contribution: International Research Project (Europe and Brazil) about secure private cloud environments. Contributions: Migrate and optimize legacy FORTRAN systems, communicate results to the international and distributed team.

TEACHING EXPERIENCE

Dawson College - *Part-time Faculty - Computer Science*

2022 - Present

Lecturer - CS courses.

McGill University - *Teaching Assistant for CS Courses*

2020 - 2021

TA for Principles of Programming Languages (Undergraduate) and Data Science (Graduate) courses.

Universidade Federal de Itajubá - *Lecturer for extension courses*

2018 - 2019

Non-credit courses for undergraduates. Taught Deep Learning, Functional Programming and Python courses.


SUPERVISORY AND MENTORING EXPERIENCE

Universidade Federal de Itajubá - *Co-supervision of Senior Undergraduate Thesis and Summer Research Projects* 2018 - 2019

- "Formal Verification with SMT Solvers for Games"
- "A study on non-relational databases for time series"
- "Short-term Power Load Forecasting with Neural Networks"
- "Intrusion Detection with Deep Learning Techniques"
- Co-supervised experiments of one undergraduate student in replicating Malware detection using Deep Learning Techniques for different datasets.

COMPLEMENTARY PROJECTS/ VOLUNTEERING

Academic Conferences, committees and societies

- Volunteer in Programming Languages Academic Conferences (SIGPLAN): POPL'23, SPLASH'22 (Virtual), ICFP'22 (Virtual) POPL'22 (Virtual), CAV'21 (Virtual), SPLASH'21 (Virtual), CAV'21 (Virtual), PLDI'21 (Virtual), <Programming>'21 (Virtual), ICFP'19, ECOOP'19, POPL'19
- Open Source Software contributor to Ruby, Java, JBoss, Neo4j, Cassandra.
 - Speaker in worldwide [conferences](#) 
 - Meetup organizer - Founder of Rust User Group São Paulo (2015-2017); Organizer of Neo4j São Paulo users (2014-2017), Cassandra Users São Paulo (2015-2017)

LANGUAGES

- Portuguese (Native), English (C1), French (B2), German (A1), Spanish (A1)

ADDITIONAL INFORMATION

- [Complete CV](#) - includes publications, mentoring and detailed teaching experience.