HANNELI TAVANTE

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Montréal, QC, Canada

EDUCATION

McGill University *Montréal, QC, Canada*
Graduate Student (MSc) - Computer Science *2020-2022*
Thesis: *A Type-safe HDL Verified in Coq*
Supervisor: Prof. Zeljko Zilic

Universidade Federal de Itajubá *Itajubá, MG, Brazil*
Master's Degree - Electrical Engineering *2018 - 2019*
Thesis: *A Haskell Implementation of THTA - Functional Programming Applied to Electrical Engineering*
Supervisors: Prof. Benedito Bonatto and Prof. Maurilio Coutinho

Universidade Federal de Itajubá *Itajubá, MG, Brazil*
Bachelor's Degree - Computer Engineering *2007 - 2011*

INDUSTRY EXPERIENCE

Nasdaq - Lead Software Engineer - SRE *June 2023 - present*
- Cloud and Architecture projects.

Intel - *Compilers and Tools Engineer* *Oct 2022 - May 2023*
Intel - *Compilers and Tools Graduate Intern* *May 2022 - Oct 2022*
- 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).
- Optimize systems performance, increase team productivity with new frameworks and tools.

RESEARCH 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. PI/Supervisor: Prof. Zeljko Zilic.

McGill University - ***Learn-OCaml Project*** *Jan 2020 - Apr 2021*
Contribution: Data collection and data analysis of online programming environments in functional programming.
- Publication: "Data Collection for the Learn-OCaml Programming Platform: Modelling How Students Develop Typed Functional Programs" - SIGCSE'21 Poster - ACM. PI: Prof. Brigitte Pientka.

Universidade Federal de Itajubá - ***aPTIs-SG2 - Smart Grids Laboratory*** *Feb 2018 - Dec 2019*
Contribution: Implement reliable solutions for electromagnetic transient analysis algorithms.
- Publication: "Open Source Implementations of Electromagnetic Transient Algorithms" - INDUSCON 2018 - IEEE. PI/Supervisor: Prof. Benedito Bonatto.

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. PI/Supervisor: Prof. Maurilio Coutinho.

Universidade Federal de Itajubá - ***PET Elétrica*** *2011*
Contribution: An analysis of emerging social networks in business domains.
- Publication: "Web social networks meters and business usage analysis" - CASoN 2011 - IEEE. PI: Prof. Maurilio Coutinho.

Universidade Federal de Itajubá - ***Uai!rrior Robotics team*** *Apr 2007 - Dec 2008*
Contributions: Electronics/development team. Circuits design and optimization. Build robust power circuits that endure robot battles. Robots had different categories (5kg, 15kg, 55kg). Design efficient control circuits (space restrictions, limited battery supplies). PI: Prof. Tales Pimenta.

TEACHING EXPERIENCE

Dawson College - ***Part-time Faculty - Computer Science*** *Winter 2023*
Teaching Database courses.

Dawson College - ***Part-time Faculty - Computer Science*** *Fall 2022*
Teaching Programming courses.

McGill University - ***Teaching Assistant for Data Science (COMP 598)*** *Fall 2021*
Graduate level course. Prepared assignments, autograders and held technology-specific tutorials.

McGill University - ***Teaching Assistant for Principles of Programming Languages (COMP 302)*** *Winter 2021*
Online undergraduate level course, using OCaml. Managed course assigments in the LearnOCaml platform, prepared autograders and designed quizzes.

McGill University - ***Teaching Assistant for Principles of Programming Languages (COMP 302)*** *Fall 2020*
Online undergraduate level course, using OCaml. Head TA. Managed course assigments in the LearnOCaml platform, prepared autograders and designed quizzes.

McGill University - ***Teaching Assistant for Principles of Programming Languages (COMP 302)*** *Winter 2020*
Undergraduate level course. Designed autograders for specific assignments in OCaml.

Universidade Federal de Itajubá - ***Lecturer for Deep Learning extension course*** *2018 (T1, T2) - 2019 (T1)*
Non-credit course for undergraduates. Prepared syllabus, taught basics of ML and DL using TensorFlow. Lectures were also recorded given the high enrollment rates (lecture sample). Responsible Instructors: Prof. Luiz Eduardo Borges da Silva and Prof. Maurilio Coutinho.

Universidade Federal de Itajubá - ***Lecturer for Python extension course*** *2018 (T1)*
Non-credit course for undergraduates (mostly U0 and not enrolled in the Engineering department). Prepared syllabus, taught basics of Python. Designed assignments. Responsible Instructors: Prof. Benedito Bonatto and Prof. Maurilio Coutinho.

Universidade Federal de Itajubá - ***Lecturer for Functional Programming extension course*** *2018 (T2)*
Non-credit course for undergraduates. Prepared syllabus, taught Functional Programming Principles in Haskell. Designed assignments. Responsible Instructors: Prof. Edmilson Moreira.

SUPERVISORY AND MENTORING EXPERIENCE

Universidade Federal de Itajubá - ***Co-supervision of Senior Undergraduate Thesis*** *2018 - 2019*
- ”Formal Verification with SMT Solvers for Games”
Project using Z3; helped student to navigate the theory of SAT and SMT solvers.

- ”A study on non-relational databases for time series”
Supported student in creating multiple tests in different databases such as Cassandra, MongoDB and InfluxDB; helped student to conduct a study comparing their performance and scalability. Delivered with a reproducible Docker Image.

- ”Short-term Power Load Forecasting with Neural Networks”
Project aiming to replicate existing studies in Power Load Forecasting, and improve the results with LSTM. Guided student through the basics of Google Collab and Tensorflow.

- ”Intrusion Detection with Deep Learning Techniques”
Helped two undergraduate students with theoretical background in CNNs and practical foundations of TensorFlow/Keras.

Universidade Federal de Itajubá - ***Co-Supervision of Summer Undergraduate Research Projects*** *2018*
- 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
- PLDI’23 Virtualization Committee
- PLDI’22 Virtualization Committee
- ICFP’21 Virtualization Committee
- CAV’21 Virtualization Committee
- Student volunteer co-captain for PLDI’23, PLDI’22, ICFP’21, POPL’21, ICFP’20, POPL’20
- Student volunteer at 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
- Universidade Federal de Itajubá (UNIFEI) - UNIFEI Student’s Society President (2008-2009); UNIFEI Computer Science and Engineering Students’ Society President (2009-2010)

Industry Contributions
- Open Source Software contributor to Ruby, Java, JBoss, Neo4j, Cassandra.
- Speaker in worldwide conferences (Brazil, USA, Europe, Argentina and Canada)
- 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)
- Cassandra MVP 2015, 2016.

LANGUAGES

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

CERTIFICATIONS, COURSES, WORKSHOPS AND SUMMER SCHOOLS

Certifications

- Machine Learning (Coursera) - 2016
- Introduction to Mathematical Thinking - Coursera (Stanford) - Apr 2015
- OCJP - Oracle Certified Java Programmer for Java 6 - Oct 2010

Summer Schools

PLISS'19 and OPLSS'19

Workshops

Programming Languages Mentoring Workshop (PLMW) @ ICFP'18 and @ PLDI'21

PUBLICATIONS

Posters

- Data Collection for the Learn-OCaml Programming Platform: Modelling How Students Develop Typed Functional Programs
SIGCSE'21 - DOI

IEEE Articles

- Open Source Implementations of Electromagnetic Transient Algorithms
INDUSCON'18 - DOI
- Web social networks meters and business usage analysis
CASoN'11 - DOI

Workshops

- Towards an Incremental Dataset of Proofs
HATRA'21 - Human Aspects of Types and Reasoning Assistants (co-located with SPLASH'21)
- A Data-centered User Study for jsCoq
ML Workshop 2021 (co-located with ICFP'21)
- A Data-Centered User Study for Proof Assistant Tools
Psychology of Programming Interest Group (PPIG) - 2021 Edition