


HANNELI TAVANTE

 github.com/hannelita  hannelita.com  hannelita@gmail.com

 Montréal, QC, Canada

EDUCATION

McGill University

Graduate Student (MSc) - Computer Science

Thesis: A Type-safe HDL Verified in Coq

Supervisor: Prof. Zeljko Zilic

Montréal, QC, Canada

2020-2022

Universidade Federal de Itajubá

Master's Degree - Electrical Engineering

Thesis: A Haskell Implementation of THTA - Functional Programming Applied to Electrical Engineering

Supervisors: Prof. Benedito Bonatto and Prof. Maurilio Coutinho

Itajubá, MG, Brazil

2018 - 2019

Universidade Federal de Itajubá

Bachelor's Degree - Computer Engineering

Itajubá, MG, Brazil

2007 - 2011

INDUSTRY EXPERIENCE

Nasdaq - Lead Software Engineer - SRE

- Cloud and Architecture projects; Google Cloud Platform

- AI projects: Gemini and VertexAI

- Software Architecture, Systems design, API integrations.

June 2023 - present

Intel - Compilers and Tools Engineer Oct 2022 - May 2023 Intel - Compilers and Tools Engineer 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.

- Publication: "[P4Testgen: An Extensible Test Oracle For P4-16](#)" - SIGCOMM'23 - ACM.

Independent Senior Consultant

- 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).

Aug 2017 - present

Codeminer42 - Senior Developer and Team Leader

- 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.

June 2014 - Apr 2017

Red Hat - Middleware Consultant

- 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.

Oct 2013 - May 2014

Top Free Games - Developer

- 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.

Nov 2012 - Oct 2013

Caelum - Developer and Instructor

- Provide training sessions for in-company's training programs. Assist the students continuously, providing them with

Aug 2011 - Oct 2012

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 - October 2022

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

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

- Publications: "[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

Contributions: Implement reliable solutions for electromagnetic transient analysis algorithms.

- Publications: "[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

Contributions: 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

Contributions: An analysis of emerging social networks in business domains.

- Publications: "[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 assignments 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 assignments 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 UO 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 SPLASH'23, 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), PLDI'21, CAV'21, SPLASH'21, CAV'21, PLDI'21, <Programming>'21, 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

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

CERTIFICATIONS, COURSES, WORKSHOPS AND SUMMER SCHOOLS

Certifications

- [Machine Learning](#) (Coursera) - 2016
- [Introduction to Mathematical Thinking](#) - Coursera (Stanford) - Apr 2015
- OCPJP - 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

ACM Papers

- [P4Testgen: An Extensible Test Oracle For P4-16](#)
SIGCOMM'23 - [DOI](#)

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