


# HANNELI TAVANTE

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 Montréal, QC, Canada

## EDUCATION

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| <b>McGill University</b><br><i>Graduate Student (MSc) - Computer Science</i><br>Supervisor: Prof. Zeljko Zilic   | <i>Montréal, QC, Canada</i><br><i>2020-2022(expected)</i> |
| <b>Universidade Federal de Itajubá</b><br><i>Master's Degree - Electrical Engineering</i><br>Supervisors: Prof. Benedito Bonatto and Prof. Maurilio Coutinho | <i>Itajubá, MG, Brazil</i><br><i>2018 - 2019</i>          |
| <b>Universidade Federal de Itajubá</b><br><i>Bachelor's Degree - Computer Engineering</i>  | <i>Itajubá, MG, Brazil</i><br><i>2007 - 2011</i>          |

## RESEARCH EXPERIENCE

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| <b>McGill University</b><br><i>Integrated Microsystems Laboratory</i><br>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. | <i>June 2021 - present</i> |
| <b>McGill University</b><br><i>Learn-OCaml Project</i><br>Contribution: Data collection and data analysis of online programming environments in functional programming.<br>- Publication: " <a href="#">Data Collection for the Learn-OCaml Programming Platform: Modelling How Students Develop Typed Functional Programs</a> " - SIGSE'21 Poster - ACM. PI: Prof. Brigitte Pientka.  | <i>Jan 2020 - Apr 2021</i> |
| <b>Universidade Federal de Itajubá</b><br><i>aPTIs-SG2 - Smart Grids Laboratory</i><br>Contribution: Implement reliable solutions for electromagnetic transient analysis algorithms.<br>- Publication: " <a href="#">Open Source Implementations of Electromagnetic Transient Algorithms</a> " - INDUSCON 2018 - IEEE. PI/Supervisor: Prof. Benedito Bonatto.  | <i>Feb 2018 - Dec 2019</i> |
| <b>Universidade Federal de Itajubá</b><br><i>Secure Cloud</i><br>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.  | <i>Mar 2018 - Apr 2019</i> |
| <b>Universidade Federal de Itajubá</b><br><i>PET Elétrica</i><br>Contribution: An analysis of emerging social networks in business domains.<br>- Publication: " <a href="#">Web social networks meters and business usage analysis</a> " - CASoN 2011 - IEEE. PI: Prof. Maurilio Coutinho.   | <i>2011</i>                |
| <b>Universidade Federal de Itajubá</b><br><i>Uai!rrior Robotics team</i><br>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.  | <i>Apr 2007 - Dec 2008</i> |

## TEACHING EXPERIENCE

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### McGill University

Jan 2020-present

Teaching Assistant

- Data Science (COMP 598)

Fall 2021

Graduate level course. Prepared assignments, autograders and held technology-specific tutorials.

- 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.

- 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.

- Principles of Programming Languages (COMP 302)

Winter 2020

Undergraduate level course. Designed autograders for specific assignments in OCaml.

### Universidade Federal de Itajubá (UNIFEI)

2018 - 2019

Lecturer

- Deep Learning extension course - 2018T1, 2018T2, 2019T1 ([lecture sample](#));

Non-credit course for undergraduates. Prepared syllabus, taught basics of ML and DL using TensorFlow. Responsible Instructors: Prof. Luiz Eduardo Borges da Silva and Prof. Maurilio Coutinho.

- Python extension course - 2018T1;

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.

- Functional Programming extension course - 2018T2

Non-credit course for undergraduates. Prepared syllabus, taught Functional Programming Principles in Haskell. Designed assignments. Responsible Instructors: Prof. Edmilson Moreira.

## INDUSTRY EXPERIENCE

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### Independent Senior Consultant

Aug 2017 - present

Short-term contracts for multiple worldwide startups

- Build APIs, Big Data, NoSQL, Data Science, Data Engineering, devops.

- Functional Programming and Machine Learning projects.

### Codeminer42

June 2014 - Apr 2017

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.

### Red Hat

Oct 2013 - May 2014

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.

### Top Free Games

Nov 2012 - Oct 2013

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.

### Caelum

Aug 2011 - Oct 2012

Developer and Instructor

- 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**

*Feb 2011 - Jul 2011*

#### *Intern and Developer*

- Propose and build internal system architectures.
- SOA consulting, enterprise integration solutions.

### **B2ML Systems**

*Jan 2010 - Jan 2011*

#### *Intern and Developer*

- Java Development (frontend and backend applications).
- Optimize systems performance, increase team productivity with new frameworks and tools.

## **SUPERVISORY AND MENTORING EXPERIENCE**

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### **Universidade Federal de Itajubá (UNIFEI)**

*2018 - 2019*

#### *Co-supervision of Senior Undergraduate Thesis*

- "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 and 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 (UNIFEI)**

*2018*

#### *Co-Supervision of Summer Undergraduate Research Projects*

- Co-supervised experiments of one undergraduate student in replicating Malware detection using Deep Learning Techniques for different datasets.

## **COMPLEMENTARY PROJECTS/ VOLUNTEERING**

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### **Academic Conferences and committees**

- Student volunteer co-captain for ICFP'21
- ICFP'21 Virtualization Committee
- CAV'21 Virtualization Committee
- Student volunteer co-captain for POPL'21
- Student volunteer co-captain for ICFP'20
- Student volunteer co-captain for POPL'20
- Student volunteer at <Programming>'21, PLDI'21, CAV'21, SPLASH'21
- Student Volunteer at POPL'19, ECOOP'19 and ICFP'19.

### **Industry Contributions**

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

## **LANGUAGES**

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- Portuguese (Native)
- English (C1)

- French (B2)
- German (A1)
- Spanish (A1)

## CERTIFICATIONS, COURSES, WORKSHOPS AND SUMMER SCHOOLS

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### 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](#)
- [OPLSS'19](#)

### Workshops

- [Programming Languages Mentoring Workshop \(PLMW\) @ ICFP'18](#)
- [Programming Languages Mentoring Workshop \(PLMW\) @ PLDI'21](#)

## PUBLICATIONS

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### 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