

Jhonatan S. Oliveira

Ph.D.

Address 116-3420 Park Street, Regina, SK, S4V 2M9 **WWW** jhonatanoliveira.github.io

Phone 1-306-552-4930

E-mail jhonatanoliveira@gmail.com

I am a Brazilian who, in December 2019, completed all degree requirements for my Ph.D. in Artificial Intelligence (AI) at the University of Regina in Canada. I completed my undergrad in Electrical Engineering at the Universidade Federal de Viçosa in Brazil, one of the best universities in the country. I have been awarded numerous scholarships worth over \$100K CDN in total. My graduate research focused on probabilistic graphical models such as Bayesian networks (BNs) and deep learning models, including sum-product networks (SPNs). I have been active in research since 2013. I have published 25 peer-reviewed papers, including one paper at AAAI-2019. The interest in this paper led to a formal invitation to visit the University of Cambridge for three months. I was awarded the 2019 Best Doctoral Dissertation Award by the Canadian Artificial Intelligence Association (CAIAC).



Why should you hire me?

I love Artificial Intelligence. During my 4 years of graduate studies, I set a new student record by publishing more than 25 peer-reviewed academic papers. My diverse background makes creativity a key strength of mine. My papers have been cited more than 50 times, and they caught the attention of the University of Cambridge, in England, which invited me for a 3 months research visit.

I am driven by big challenges. When I was starting my M.Sc., I was given the tough challenge of publishing in a top-tier AI conference. Later, an idea of mine was accepted at AAAI-2019. That was the 3rd publication in the history of the Computer Science department - being the 1st exclusively having authors from my university. Moreover, I was awarded the 2019 Best AI Ph.D. Thesis Award in Canada.

I am a team player. During undergrad, I helped to create the student union to represent my Engineering department. Moreover, I was a co-founder of the autonomous robot soccer team. These experiences played a part in awarding me a national-wide, highly competitive, exchange student scholarship to visit a university in Canada for 1 year.

I have always been passionate about learning. During high school, I taught myself programming because I wanted to understand how computers work. I used that knowledge to build a primitive chatbot system, which I sold to local companies to pay school. I ended up accepted in one of the best universities in Brazil.



Education

- 2016-09 - **Ph.D.: Computer Science**
2019-12 University Of Regina - Regina, Canada
- 2015-01 - **M.Sc.: Computer Science**
2016-08 University Of Regina - Regina, Canada
- 2009-01 - **Bachelor: Electrical Engineering**
2014-12 Universidade Federal De Viçosa - Viçosa, Brazil



Work History

- 2019-07 - **Freelance Researcher**
Current Self Employed, Regina, SK
- Develop machine learning solutions for startups in Canada.
 - Details: Research and implement deep learning models for startup companies. For instance, a time series prediction model using LSTM, and a recommender system for recruitment process. Implementations are mostly in Tensorflow (Python).
- 2018-08 - **Senior Software Engineer**
Current Gign, Regina, Canada, SK
- Responsible for choosing technology, designing the architecture of the product, managing the development team, and developing core components.
 - Details: Angular; Typescript (Javascript); Ionic; NativeScript (similar to React Native); Video Streaming Services; Google Cloud Functions (serverless solution); Firebase (non-relational database); Continuous integration/continuous development (CI/CD); multiple channels release in Git (development, staging, production).
- 2011-01 - **Software Engineer Intern**
2011-12 Sydle, Viçosa, Brazil, MG
- Member of the development team for software to manage energy contracts in large corporations
 - Details: Scrum agile development; Java for Web; Struts2 framework; ORM/MVC design patterns; Javascript with Sencha ExtJS framework; Unit testing



Publications

Papers in Refereed Journals

C.J. Butz, J.S. Oliveira, A. dos Santos, and A.L. Madsen, An Empirical Study of Bayesian Network Inference with Simple Propagation, *International Journal of Approximate Reasoning*, Vol. 92, 198-211, 2018.

C.J. Butz, A. dos Santos, J.S. Oliveira, and C. Gonzales, An Empirical Study of Testing Independencies in Bayesian Networks using rp -Separation, *International Journal of Approximate Reasoning*, Vol. 92, 270-278, 2018.

C.J. Butz, A. dos Santos, J.S. Oliveira, and C. Gonzales. On a Simple Method for Testing Independencies in Bayesian Networks, *Computational Intelligence*, Vol. 34, No. 3, 789-801, 2018.

C.J. Butz, J.S. Oliveira and A. dos Santos, On Darwinian Networks, *Computational Intelligence*, Vol. 33, No. 4, 629-655, 2017.

C.J. Butz, J.S. Oliveira, and A.L. Madsen, Bayesian Network Inference using Marginal Trees, *International Journal of Approximate Reasoning*, Vol. 68, 127-152, 2016.

Refereed Conference Papers

C.J. Butz, J.S. Oliveira, R. Peharz, Sum-Product Network Decompilation, arXiv:1912.10092, to be submitted to ICML 2020.

C.J. Butz, J.S. Oliveira, A. dos Santos, A.L. Teixeira, Deep Convolutional Sum-Product Networks, *Thirty-Third AAAI Conference on Artificial Intelligence*, 2019.

C.J. Butz, A. dos Santos, J.S. Oliveira, and A.L. Madsen, Exploiting Symmetry of Independence in d -Separation, *Thirty-second Canadian Conference on Artificial Intelligence*, 42--54, 2019

A.L. Madsen, C.J. Butz, J.S. Oliveira, and A. dos Santos, Solving Influence Diagrams with Simple Propagation, *Thirty-second Canadian Conference on Artificial Intelligence*, 68--79, 2019

C.J. Butz, A.L. Teixeira, J.S. Oliveira, and A. dos Santos, On the Tree Structure of Deep Convolutional Sum-Product Networks, *Thirty-Second International Florida Artificial Intelligence Research Society Conference*, 500--503, 2019

C.J. Butz, J.S. Oliveira, A. dos Santos, A.L. Teixeira, P. Poupart, A. Kalra, An Empirical Study of Methods for SPN Learning and Inference, *Ninth International Conference on Probabilistic*

Graphical Models, 49--60, 2018.

A.L. Madsen, C.J. Butz, J.S. Oliveira, A. dos Santos, Simple Propagation with Arc-Reversal in Bayesian Networks, Ninth International Conference on Probabilistic Graphical Models, 260--271, 2018.

C.J. Butz, A. dos Santos, J.S. Oliveira, and J. Stavrinos, Efficient Examination of Soil Bacteria using Probabilistic Graphical Models, Thirty-first International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems, 315--326, 2018.

C.J. Butz, J.S. Oliveira, and A.E. dos Santos, On Learning the Structure of Sum-Product Networks, IEEE Symposium Series on Computational Intelligence, 2997--3004, 2017.

A. dos Santos, C.J. Butz, and J.S. Oliveira, On Converting Sum-Product Networks into Bayesian Networks, Thirtieth Canadian Conference on Artificial Intelligence, 329--334, 2017.

J.S. Oliveira, C.J. Butz, and A. dos Santos, Resolving Inconsistencies of Scope Interpretations in Sum-Product Networks, Thirtieth Canadian Conference on Artificial Intelligence, 303--315, 2017.

C.J. Butz, A. dos Santos, and J.S. Oliveira, On Finding Relevant Variables in Discrete Bayesian Network Inference, Thirtieth International Florida Artificial Intelligence Research Society Conference, 730--735, 2017.

C.J. Butz, A.E. dos Santos, J.S. Oliveira, Relevant Path Separation: A Faster Method for Testing Independencies in Bayesian Networks, Eighth International Conference on Probabilistic Graphical Models, 74 -- 85, 2016.

C.J. Butz, J.S. Oliveira, A.E. dos Santos, and A.L. Madsen, On Bayesian Network Inference with Simple Propagation, Eighth International Conference on Probabilistic Graphical Models, 62 -- 73, 2016.

C.J. Butz, A. dos Santos, J.S. Oliveira, and C. Gonzales, A Simple Method for Testing Independencies in Bayesian Networks, Twenty-ninth Canadian Conference on Artificial Intelligence, 213--223, 2016.

A.L. Madsen, C.J. Butz, J.S. Oliveira, A. dos Santos, On Tree Structures used by Simple Propagation for Bayesian Networks Inference, Twenty-ninth Canadian Conference on Artificial Intelligence, 207--212, 2016.

C.J. Butz, J.S. Oliveira, A. dos Santos, and A.L. Madsen, Bayesian Network Inference with Simple Propagation, Twenty-ninth International Florida Artificial Intelligence Research Society Conference, 650 -- 655, 2016.

C.J. Butz, A. dos Santos, J.S. Oliveira, and C. Gonzales, Testing Independencies in Bayesian Networks with i-Separation, Twenty-ninth International Florida Artificial Intelligence Research

Society Conference, 644 -- 649, 2016.

C.J. Butz, J.S. Oliveira and A. dos Santos, Darwinian Networks, Twenty-eighth Canadian Conference on Artificial Intelligence, 16--29, 2015.

A.L. Madsen and C.J. Butz, Exploiting Semantics in Bayesian Network Inference Using Lazy Propagation, Twenty-eighth Canadian Conference on Artificial Intelligence, 3--15, 2015.

C.J. Butz, J.S. Oliveira and A. dos Santos, Determining Good Elimination Orderings with Darwinian Networks, Twenty-eighth International Florida Artificial Intelligence Research Society Conference, 600 -- 603, 2015.

C.J. Butz, J.S. Oliveira and A.L. Madsen, Bayesian Network Inference Using Marginal Trees, Seventh European Workshop on Probabilistic Graphical Models, 81--96, 2014.



Academic Experience

Teaching Assistant, University of Regina

(Regina, SK, Canada — multiple times)

- Introductory programming class in C++
- Web development class (HTML/CSS/JS/MySQL)
- Experience as a marker and lab instructor
- Database Systems (Guest Lecturer)
- Uncertain Reasoning in AI (Guest Lecturer)
- Introduction to Programming and Problem-Solving Techniques (Guest Lecturer)

Lead Developer of the Autonomous Robot Soccer Team BDP, Universidade Federal de Viçosa

(Viçosa, MG, Brazil — 01/2010 - 12/2014)

- Lead developer of the robots' framework
- Details: Image processing for computer vision tasks; Multi-threading and real-time implementations in C++ and Java; Robotic kinematics (control systems) simulations in Matlab; Developed AI module using Bayesian networks, decision trees, and genetic algorithms.



Awards and Scholarships

- 2016 Fall - Graduate Studies Research Fellowship (GRF) - \$22,623.38 CAD per year for 4 years
- 2016 Winter - Graduate Studies Scholarship (GSS) - \$6,000 CAD
- 2015 Fall - Scholarly Award - \$3,000 CAD
- 2015 Spring/Summer - GSS - \$6,000 CAD
- 2015 Winter - Scholarly Award - \$6,000 CAD
- 2013 - Science Without Borders - \$65,023.41 BRL (~ 22,500 CAD)
- 2019 - Best Doctoral Dissertation Award by the Canadian Artificial Intelligence Association



Volunteer

- 2nd Electrical Engineering Symposium (2013), Viçosa, Brazil.
- 26th Canadian Conference on Electrical and Computer Engineering (2013), Regina, SK, Canada.
- 26th Canadian Conference on AI (2013), Regina, SK, Canada.



Extracurricular Courses

- Sequence Models, deeplearning.ai, February 2019
- Convolutional Neural Networks, deeplearning.ai, December 2017, Certificate: <https://www.coursera.org/account/accomplishments/certificate/MX965WE5BCPA>.
- Structuring Machine Learning Projects, deeplearning.ai, October 2017, Certificate: <https://www.coursera.org/account/accomplishments/certificate/CY7FH4WP37Z7>.
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, deeplearning.ai, October 2017, Certificate: <https://www.coursera.org/account/accomplishments/certificate/4DPFU2SJUGFH>.
- Neural Networks and Deep Learning, deeplearning.ai, September 2017, Certificate: <https://www.coursera.org/account/accomplishments/certificate/2Q8977CRUM3D>.
- Probabilistic Graphical Models 1: Representation, Stanford University, May 2017, Certificate: <https://www.coursera.org/account/accomplishments/certificate/TM7KHT24EBQV>.
- Build a Modern Computer from First Principles: From Nand to Tetris (Project-Centered Course), Hebrew University of Jerusalem, August 2016, Certificate: <https://www.coursera.org/account/accomplishments/certificate/R4BWE5XK593G>.
- Machine Learning, Coursera, Stanford University, June 2014, Certificate: https://jhonatanoliveira.github.io/files/Coursera_Certificate_v1-972224147177.pdf.