

# Jhonatan S. Oliveira

Ph.D.

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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. Now, I am eager to start working in industry, hopefully in a position involving some aspects of research. 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, yielding a joint research paper posted on arxiv (<https://arxiv.org/abs/1912.10092>), which is to be submitted to ICML-2020. It is worth mentioning that I have been asked to be a program committee member at ICML-2020.



## 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



## 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  $\text{rp}$ -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  $\text{d}$ -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.



## Academic Experience

### **Teaching Assistant, University of Regina**

*(Regina, SK, Canada — 10 times)*

- Introductory programming class (CS110)
- Web development class (CS215)
- Experience as a marker and lab instructor

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

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

- Experience with theoretical robotics and hardware implementation
- Developer of different artificial intelligence systems, including decision trees, genetic algorithms, and Bayesian networks
- Extensive use of C++

### **Guest Lecturer, University of Regina**

*(Regina, SK, Canada)*

- CS875 - Database Systems
- CS838 - Uncertain Reasoning in AI
- CS110 - Introduction to Programming and Problem-Solving Techniques



## Work History

2018-08 -  
Current

### **Senior Software Engineer**

Gign, Regina, Canada, SK

- Management position in a small music streaming mobile app developer team
- Duties involve designing technical documentation, automated tests, project deployment, reviewing and supervising developers
- Experience with cloud computing, video/audio streaming, code versioning, Typescript, and Node.js

2011-01 -  
2011-12

### **Software Engineer Intern**

Sydle, Viçosa, Brazil, MG

- Member of a medium-sized software development company working on a contract energy management software used by multinational industries.
- Development with Scrum, extensive experience developing with Java, version controlling with a large developer team involving different channels of release (development, testing, and production-ready).

2010-07 -

### **Web Developer**

- 2010-12 Centro de Educação à Distância - Universidade Federal de Viçosa, Viçosa, Brazil, MG
- Web developer for applications used by researchers and small businesses at the Federal University of Viçosa in Brazil.
  - Development involved tools such as Apache, PHP, MySQL, and jQuery. Furthermore, we followed standards including MVC and ORM design patterns.
- 2009-07 - **Linux Network Administrator Intern**  
2009-12 Universidade Federal de Viçosa, Viçosa, Brazil, MG
- Maintainer of a small-size network of computers for student labs at the Federal University of Viçosa.
  - Techniques used include the DHCP protocol and the Linux Terminal Server Project (LTSP).



## 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)



## 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

- 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](https://jhonatanoliveira.github.io/files/Coursera_Certificate_v1-972224147177.pdf).