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 was submitted to ICML-2020. It is worth mentioning that I have been asked to be a program committee member at ICML-2020.

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.

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 - 2019-12

Ph.D.: Computer Science

University Of Regina - Regina, Canada

2015-01 - 2016-08

M.Sc.: Computer Science

University Of Regina - Regina, Canada

2009-01 - 2014-12

Bachelor: Electrical Engineering

Universidade Federal De Viçosa - Viçosa, Brazil

Work History

2019-07 - Current

Freelance Researcher

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 - Current

Senior Software Engineer

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 - 2011-12

Software Engineer Intern

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. Stavrinides, 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)

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.