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Leonardo Cotta

Machine Learning

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**Online
Resources**
linkedin.com/cotta
https://goo.gl/d3UsUX
cottascience.github.io

**Programming
Languages**
C/C++ ★★★★★
PYTHON ★★★★★
R ★★★★★
Julia ★★★★★

OS Skills
GNU/Linux ★★★★★
OSX ★★★★★
Windows ★★★★★

Languages
Portuguese ★★★★★
English ★★★★★
Spanish ★★★★★

Interests

- Invariant models of graphs, sets and posets
- Energy-based models
- Stochastic optimization (MCMC methods)
- Random matrix theory
- Algebraic combinatorics

Research Experience

- 08/17 - Now **PhD Research** [Purdue University, West Lafayette, IN, USA](#)
Statistical Models and Stochastic Optimization methods for learning higher-order structures representations of graphs.
- 09/16 - 07/17 **Research Assistant** [Universidade Federal de Minas Gerais, Belo Horizonte, Brazil](#)
Research on soccer players transactions and performance together with Professors Pedro O.S. Vaz de Melo and Fabricio Benevenuto (UFMG).
- 04/16 - 07/17 **Research Assistant** [Universidade Federal de Minas Gerais, Belo Horizonte, Brazil](#)
Research on the role of mobility in real mobile networks connectivity. Supervised by Professors Antonio A. F. Loureiro and Pedro O.S. Vaz de Melo
- 01/15 - 03/16 **Research Assistant** [Universidade Federal de Minas Gerais/LG, Belo Horizonte, Brazil](#)
Development of authentication mechanisms for LG Eletronics. One is an IoT product life cycle authentication protocol and the other is an User2Device authentication alternative. Supervised by Professors Leonardo B. Oliveira, Italo Cunha and Antonio A. F. Loureiro
- 05/14 - 09/14 **Research Assistant** [University of Calgary, Calgary, Canada](#)
Work under the supervision of Professor Peter Hoyer. Study of quantum coin flipping protocols using point games (quantum cryptography). Reports of the protocol developed by Hoyer and Pelchat and its achieved bias proof were produced for the institute.
- 08/12 - 08/13 **Lab Assistant** [Universidade Federal de Minas Gerais, Belo Horizonte, Brazil](#)
As part of the Young talents of science award, I was affiliated with the e-Speed laboratory headed by Professor Renato Ferreira. I developed a Web interface for a software used in the lab (Watershed).

Education

- 2017 - Now **PhD in Computer Science** [Purdue University, USA](#)
Higher-order representations of graphs: Representation Learning and Stochastic Optimization.
- 2012 - 2016 **Bachelor's Degree in Computer Science** [Universidade Federal de Minas Gerais, Brazil](#)
Understanding the role of mobility in real mobile networks connectivity
- 2014 - 2014 **Bachelor's Degree in Computer Science** [University of Calgary, Canada](#)
On the use of ladder structures in point games for the quantum coin flipping protocol
- 2010 - 2010 **High School** [Carson Graham High School, Canada](#)
Six-month exchange program in High School
- 2009 - 2011 **High School** [Colégio Marista Dom Silvério, Brazil](#)

Grants and awards

- 06/18 - 06/19 **Data Science approaches to prevent failures in systems engineering** [Systems Engineering Research Center \(SERC\) and Purdue University, USA](#)
RAship provided to study data science approaches to prevent failures in systems engineering.
- 08/17 - 08/18 **Qatar Computing Research Institute Fellowship** [Purdue University, USA](#)
PhD fellowship provided by QCRI at Purdue University
- 01/16 - 12/16 **Undergrad research funding** [CNPq, Brazil](#)
Funding provided by the Brazilian Federal Government agency CNPq.
- 01/14 - 12/14 **Science Without Borders Student** [University of Calgary/CNPq, Calgary, Canada](#)
Scholarship provided by the Brazilian Federal Government agency CNPq to study and work for one year at the University of Calgary in Canada.
- 08/12 - 08/13 **Young talents of science award** [CAPES, Brazil](#)
Brazilian Federal Government agency CAPES funded freshman students across the country to assist their respective departments research projects. The funding was given as an award to students who performed well at a general purpose test. It was supposed to be a first experience with research for undergrad students.

List of publications

- Unsupervised Joint k -node Graph Representations with Compositional Energy-Based Models
L Cotta, CHC Teixeira, A Swami, B Ribeiro
NeurIPS
December, 2020
- Graph Pattern Mining and Learning through User-defined Relations
CHC Teixeira, L Cotta, B Ribeiro, W Meira Jr
IEEE ICDM
Singapore, November, 2018

- Understanding the role of mobility in real mobile ad-hoc networks connectivity
L. Cotta, POSV de Melo, AAF Loureiro
IEEE ISCC
Crete, Greece, July 2017
- AoT: Authentication and Access Control for the Entire IoT Device Life-Cycle
A. L. Maia Neto, A. L. F. Souza, Í. Cunha, M. Nogueira, I. O. Nunes, L. Cotta, N. Gentile, A. A. F. Loureiro, D. F. Aranha, H. K. Patil, and L. B. Oliveira
ACM Sensys
Stanford, CA, November 2016
- Using FIFA Soccer Video Game Data for Soccer Analytics.
L. Cotta, P. O.S. Vaz de Melo, F. Benevenuto, A. A. F. Loureiro
KDD Workshop on Large Scale Sports Analytics
San Francisco, CA, USA. August 2016.
- NomadiKey: User Authentication for Smart Devices based on Nomadic Keys
L. Cotta, A. L. Fernandes, L. T. C. Melo, L. F. Z. Saggioro, F. Martins, A. L. Maia Neto, A. A. F. Loureiro, Í. Cunha, and L. B. Oliveira
IEEE ICC
Kuala Lumpur, Malaysia, May 2016

Brazilian venues:

- Uma Survey em Autenticação de Usuarios em Smart Devices: Defesas e Ataques
Artur L. F. Souza, Leonardo Cotta, Lucas Goulart Grossi Antonio A. F. Loureiro, Leonardo B. Oliveira
SBC SBSEG 2015 (Brazilian Symposium on Information and Computational System)
Florianópolis, Brazil.
- Teclanômade: Uma solução de autenticação para usuários de dispositivos inteligentes baseada em Teclados Nômades
Antonio L Maia Neto, Artur Luis Fernandes, Frederico Martins, Leandro TC Melo, Leonardo Cotta, Luiz Felipe Z Saggioro, Antonio AF Loureiro, Leonardo B Oliveira
SBC SBSEG 2015 (Brazilian Symposium on Information and Computational System)
Florianópolis, Brazil.