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

- Causal inference

- Stochastic optimization (MCMC methods)

- Combinatorics

- **Applications:** recommender systems, bioinformatics, computer networks and sports analytics.

Research Experience

05/21 - 08/21 Internship — Intel Labs, Santa Clara, CA, USA
Causal Representations for Extrapolations in Link Prediction.
Supervisor: Nesreen K. Ahmed.

08/17 - Now PhD Research — Purdue University, West Lafayette, IN, USA
Higher-order reasoning with graph data: Representations, learning and inference.
Supervisor: Bruno Ribeiro.

09/16 - 07/17 Research Assistant — Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
Research on soccer players transactions and performance using video game data.
Supervisors: Pedro O.S. Vaz de Melo and Fabricio Benevenuto.

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.
Supervisors: 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.
Supervisors: Leonardo B. Oliveira, Ítalo Cunha and Antonio A. F. Loureiro.

05/14 - 09/14 Research Assistant — University of Calgary, Calgary, Canada
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.
Supervisor: Peter Hoyer.

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, where I developed a Web interface for a software used in the lab (Watershed).
Supervisor: Renato Ferreira.

Teaching Experience

2019	**CS242 - Introduction to Data Science**	Purdue University, USA
	Graduate Teaching Assistant.	
2020	**CS520 - Computational Methods in Optimization**	Purdue University, USA
	Graduate Teaching Assistant.	

Education

2017 - Now	**PhD in Computer Science**	Purdue University, USA
	Higher-order reasoning with graph data: Representations, learning and inference.	
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.	

Grants and awards

06/18 - 06/19 Data Sciente 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.

Service

- AAAI 2021 TPC
- SDM (SIAM International Conference on Data Mining) 2021 TPC

Patents

- System and method for authentication of things
  Patent number:10523437

Inventors: LB Oliveira, AAF Loureiro, AL Maia Neto, HK Patil, M Nogueira, Í Cunha, ALF Souza, **L Cotta**, LFZ Saggioro, LG Grossi, IO Nunes, RR Rocha

List of publications

- Reconstruction for Powerful Graph Representations
  L Cotta, C Morris, B Ribeiro
  NeurIPS
  Virtual-only Conference, December, 2021

- Unsupervised Joint k-node Graph Representations with Compositional Energy-Based Models
  L Cotta, CHC Teixeira, A Swami, B Ribeiro
  NeurIPS
  Vancouver, Canada, 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
  AL Maia Neto, ALF Souza, Í Cunha, M Nogueira, IO Nunes, **L Cotta**, N Gentille, AAF Loureiro, DF Aranha, HK Patil, and LB Oliveira
  ACM Sensys
  Stanford, CA, November 2016

- Using FIFA Soccer Video Game Data for Soccer Analytics.
  L Cotta, POS Vaz de Melo, F Benevenuto, AAF 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, AL Fernandes, LTC Melo, LFZ Saggioro, F Martins, AL Maia Neto, AAF Loureiro, Í Cunha, and LB Oliveira
  IEEE ICC
  Kuala Lampur, Malaysia, May 2016

Brazilian venues:

- Big Data Analytics no Projeto de Redes Móveis: Modelos
  C Celes, IO Nunes, J Borges, F Silva, **L Cotta**, POS Vaz de Melo, H Ramos, R Andrade, A Loureiro

- Uma Survey em Autenticação de Usuarios em Smart Devices: Defesas e Ataques
  ALF Souza, **L Cotta**, LG Grossi, AAF Loureiro, LB 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
  ALM Neto, ALF Souza, F Martins, LTC Melo, **L Cotta**, LFZ Saggioro, AAF Loureiro, LB Oliveira
  SBC SBSEG 2015 (Brazilian Symposium on Information and Computational System)
  Florianópolis, Brazil.