Daniel Augusto de Souza

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Education

Ph.D. in Computer Science
London, UK

UNIVERSITY COLLEGE LONDON (UCL) UNDER PROF. MARC DEISENROTH
Sep. 2021 - Now

- Currently researching inference techniques for sparse Gaussian process models and their effects on downstream tasks.

M.Sc. in Computer Science
Fortaleza, Brazil

UNIVERSIDADE FEDERAL DO CEARÁ (UFC) UNDER PROF. JOÃO PAULO PORDEUS AND PROF. CÉSAR LINCOLN
Feb. 2018 - Sep. 2020

- Defended with a cumulative score of 9.22 (out of 10)
- Focused on Gaussian processes models. In particular, sample-efficient deterministic approximations for flexible Bayesian GPLVM and alternative deep Gaussian process models based on locally linear projections with focus on more interpretability and non-stationary behaviour.
- Master's degree dissertation: *Contributions on latent projections for Gaussian process modeling* 📄 URL

B.Sc. in Computer Science
Fortaleza, Brazil

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)
Apr. 2013 - Aug. 2017

- Graduated with a cumulative score of 8.86 (out of 10)
- Took elective classes related to formal logic, formal software verification, number theory and neural networks.

Undergraduate exchange program
Bellingham, WA, US

WESTERN WASHINGTON UNIVERSITY (WWU)
Fall 2015 - Spring 2016

- Finished with a cumulative GPA of 3.3 (out of 4)
- Took robotics related classes with a focus on embedded IA programming
- Alongside the computer science classes, I also took abstract algebra and graph theory at the math department.
- Funded by the Brazil Scientific Mobility Program award from the Federal Government of Brazil

Publications

Parallel MCMC Without Embarrassing Failures
📄 URL

AUTHORS: DANIEL AUGUSTO R. M. A. DE SOUZA, DIEGO MESQUITA, SAMUEL KASKI AND LUIGI ACERBI
Apr. 2021

- To appear in: **25th International Conference on Artificial Intelligence and Statistics (AISTATS)**
- In this paper, we show three pathologies that most embarrassingly parallel MCMC algorithms are susceptible to. We present a scalable solution that can overcome these failures using Gaussian process surrogate modelling and active learning.

Learning GPLVM with arbitrary kernels using the unscented transformation
📄 URL

AUTHORS: DANIEL AUGUSTO R. M. A. DE SOUZA, DIEGO MESQUITA, CÉSAR LINCOLN C. MATTOS AND JOÃO PAULO. P. GOMES
Apr. 2021

- Published in: **24th International Conference on Artificial Intelligence and Statistics (AISTATS)**
- In this article, we investigated the unscented transformation as a parameter-less alternative to Gauss-Hemite quadrature and Monte Carlo integration for arbitrary kernel Gaussian process latent variable models. We illustrate the applicability of our method with experiments on dimensionality reduction and multistep-ahead prediction with uncertainty propagation.

Evaluation of Data Based Normal Behavior Models for Fault Detection in Wind Turbines
📄 URL

AUTHORS: DANIEL AUGUSTO R. M. A. DE SOUZA, THIAGO DE P. VASCONCELOS, CÉSAR LINCOLN C. MATTOS AND JOÃO PAULO P. GOMES
Oct. 2019

- Published in: **8th Brazilian Conference on Intelligent Systems (BRACIS)**
- Part of the joint project with Delfos Intelligent Maintenance.
- In this article, we propose that models for fault detection should use more specific metrics instead of just regression metric. To support our argument, we evaluated various normal behaviour models and analysed the results by root mean squared error and another task-specific metric.

No-PASt-BO: Normalized Portfolio Allocation Strategy for Bayesian Optimization
📄 URL

AUTHORS: THIAGO DE P. VASCONCELOS, DANIEL A. R. M. A. DE SOUZA, CÉSAR L. C. MATTOS AND JOÃO P. P. GOMES
Nov. 2019

- Published in: **IEEE 31st International Conference on Tools with Artificial Intelligence (ICTAI)**
- Part of the joint project with Delfos Intelligent Maintenance.
- I helped the main author with the technical aspects of the experimental section of the paper, mostly related with computer infrastructure and code.

Teaching Experience

Graduate teaching assistant: Machine Learning

Fortaleza, Brazil

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)

2019

- Assisted students for the second semester of 2019 on the class Machine Learning. This included meetings, online support and lecturing.

Funded undergraduate teaching assistant: Theory of Computation

Fortaleza, Brazil

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)

Mar. 2017 - Aug. 2017

- Assisted students for the second semester of 2017. This included meetings, online support and exercise grading.
- During this period a software using web technologies to various simulators was developed in order to help students test and program in various different models of computation.

Undergraduate teaching assistant: Introduction to Logic

Fortaleza, Brazil

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)

Aug. 2014 - Aug. 2015

- Assisted students for the second semester of 2014 and first semester of 2015 on the class Introduction to Logic. This included meetings and online support.

Honors & Awards

2019	**Travel grant**, BRACIS presentation - UFC
2018	**Scholarship**, M.Sc. Scholarship - FUNCAP [Declined]
2018	**Scholarship**, M.Sc. Scholarship - Fundação CAPES/CNPq [Declined]
2015	**Scholarship**, Brazil Scientific Mobility Program - Fundação CAPES/CNPq
2015	**Travel grant**, NAT@Logic and 10th LSFA
2014	**ICPC - National 42nd Place**, International Collegiate Programming Contests - Brazilian National phase
2014	**ICPC - Regional 1st Place**, International Collegiate Programming Contests - Brazilian Regional phase
2014	**Scholarship**, Institutional Scientific Initiation Scholarship Program (PIBIC) - Fundação CAPES
2013	**Scholarship**, Jovens Talentos para a Ciência - Fundação CAPES

Experience

Dell LEAD

Fortaleza, Brazil

AI PROGRAMMER

Jun. 2021 - Oct. 2021

- Implemented machine learning models for classification of textual time series.

Delfos Intelligent Maintenance

Fortaleza, Brazil

GRADUATE PART-TIME RESEARCHER

May 2019 - Sep. 2020

- Joint project between Universidade Federal do Ceará, Delfos Intelligent Maintenance and Fundação ASTEF. Funded by Delfos Intelligent Maintenance.
- Researched machine learning models for fault detection and process monitoring for wind turbines and hydroelectric plants.

GreenMile LLC

Fortaleza, Brazil

JUNIOR SOFTWARE ENGINEER

Aug. 2017 - Sep. 2018

- Worked on the DevOps team, developing and maintaining internal tools for product support and software delivery in Python, Node.JS and React.
- After being transferred to the Architecture and Microservices team, I focused on dockerizing old microservices and setting up them on Amazon's ECS.
- Alongside these projects, a practical Bayesian model was developed and implemented as a microservice in Java and Stan.

Deals Only WebStore

Bellingham, WA, US

SUMMER INTERN

Jun. 2016 - Jul. 2016

- Refactored and optimized legacy PHP and Javascript code related to the shop front-end and internal staff tooling.
- Studied various E-commerce platform's sandboxing APIs and tried to integrate them to existing systems.

Undergraduate research assistant (Universidade Federal do Ceará) *Fortaleza, Brazil*

LOGIA (GROUP OF LOGIC AND ARTIFICIAL INTELLIGENCE) ADVISED BY PROF. CARLOS BRITO *Sep. 2013 - Sep. 2015*

- Researched about Shannon's classical information theory and how it plays with physical systems.
- After this first project, our focus shifted to connections between kinds of typed lambda calculi with logic systems and how proof assistants can help mathematicians and computer scientists.

Skills

Programming	Python, C++, Java, SQL, Git, Bash.
Scientific packages	Tensorflow, JAX, Julia, Stan
Languages	Native Portuguese, proficient English (TOEFL iBT: 110) and basic Japanese

Community Service

Computer Science's Academic Week (SAC) XIV *Fortaleza, Brazil*

TITLE: A VIRUS FOR POKÉMON RED *Aug. 2019*

- Presented a talk for high school and first year college students on computer security.

Tutoring for the International Collegiate Programming Contests *Fortaleza*

STUDY GROUP GEMP *2013 - 2015*

- Tutored first year students about programming in C, data structures, and competitive programming.

Talks and Presentations

2019 LOGIA Machine Learning study group *Fortaleza, Brazil*

- Part of a weekly colloquium organized by the LOGIA Machine Learning group with students from Universidade Federal do Ceará, Universidade Estadual do Ceará, and Instituto Federal do Ceará. *2019*
- Presented talks on: Unscented Gaussian Process Latent Variable Model, Gaussian Process Latent Variable Model for fault diagnosis, the lottery ticket hypothesis, and Sparse Gaussian Processes and Deep Gaussian Processes.

Workshop on Philosophy and Information Theory - WLOGIA II *Fortaleza, Brazil*

TITLE: DOLPHIN COMMUNICATION AND INTELLIGENT SIGNALS *Mar. 2015*

- Part of a workshop organized by research groups LOGIA (Computer Science department) and PenCogLing (Philosophy department).