Curriculum Vitae

Antônio Horta Ribeiro

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Current Position:
Postdoctoral Fellow
Uppsala University
Department of Information Technology,
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Academic Positions

Postdoctoral Fellow   *Fev. 2021 - Now*
DEPARTMENT OF INFORMATION TECHNOLOGY, UPPSALA UNIVERSITY   UPPSALA, SWEDEN
I am working under the supervision of Thomas Schön on the intersection of machine learning, signal processing, and control theory.

Postdoctoral Associate   *Mar. 2020 - Fev. 2021*
DEPARTMENT OF COMPUTER SCIENCE, UFMG   BELO HORIZONTE, BRASIL
I worked on developing new machine learning algorithms and studying its application to engineering and health care. My position was funded by the Brasilian Agency CAPES, through the institutional internalization program (PRINT). I funded my own with money obtained from an open call from the Brazilian Agency CAPES.

Education

Ph.D., Electrical Engineering   *Aug. 2017 - Mar. 2020*
UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)   BRAZIL
I was supervised by Luis Antonio Aguirre and co-supervised by Thomas B. Schon. I stayed one year, from Sept. 2018 to Sept. 2019, as a guest doctoral student at Uppsala University (Sweden). My Thesis named "Learning nonlinear differentiable models for signals and systems with applications" won the award of Best thesis in the Electrical Engineering department and also the best thesis in Engineering and Physical Sciences in the University.

M.Sc., Electrical Engineering   *Jan. 2016 - Jul. 2017*
UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)   BRAZIL
I was supervised by Luis Antonio Aguirre. My thesis was named "Recurrent Structures in System Identification". I completed 25 credits the equivalent 375 hours in class and my grade pointed average was 5.0 out of 5.0.

B.S.E., Electrical Engineering   *Jan. 2016 - Jul. 2017*
UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)   BRAZIL
I completed a total of 240 credits (3600 class-hours). And obtained a grade pointed average 4.91 out of 5.00. My course work included disciplines in control engineering, signal processing, eletrical Drives, power eletronics, system identification, electrical circuits, optimization and communications.

Awards

Benzelius award   *2022*
ROYAL SOCIETY OF SCIENCES IN UPPSALA   SWEDEN
I was awarded the Benzelius Award (Benzeliusbelöningarna) due to my 'contributions to fundamental method development in machine learning and control technology, as well as its use to solve important problems in cardiology'. The prize is awarded yearly by the Royal Society of Sciences in Uppsala (Kungliga Vetenskaps-Societeten i Uppsala): the oldest of the royal academies in Sweden, founded in 1710. Named after Erik Benzelius, the prize is awarded to young researchers and comes with the amount of 25000 kronors.

Best Ph.D. Thesis in Engineering and Physical Sciences   *2021*
UNIVERSIDADE FEDERAL DE MINAS GERAIS   BELO HORIZONTE, BRAZIL

My Ph.D. thesis was awarded the best Ph.D. thesis defended in 2020 in engineering and physical sciences at the Universidade Federal de Minas Gerais (UFMG), Brazil. In portuguese: Grande Premio de Teses na área de ciências exatas e da terra e engenharias.

Best Ph.D. Thesis in Electrical Engineering *2021*
UNIVERSIDADE FEDERAL DE MINAS GERAIS   BELO HORIZONTE, BRAZIL
My thesis was awarded the best Ph.D. thesis defended in 2020 in the Department of Electrical Engineering at the Universidade Federal de Minas Gerais (UFMG), Brazil. The thesis was then forwarded to compete with the thesis from all other Engineering and Physical Sciences departments at the university (where it was also awarded the best thesis, see the award above).

Young Author Award (Honorable Mention) *2021*
19TH IFAC SYMPOSIUM ON SYSTEM IDENTIFICATION   ONLINE
I have been one of the three finalists of the Young Author Award with the paper 'Beyond Occam's Razor in System Identification: Double-Descent when Modeling Dynamics'.

Best Poster Award *2019*
SCILIFELAB SCIENCE SUMMIT   UPPSALA, SWEDEN
I have been awarded the best poster award for the work 'Automatic Diagnosis of Short-Duration 12-Lead ECG using a Deep Convolutional Network'.

Travel Award *2018*
MACHINE LEARNING FOR HEALTH (ML4H) WORKSHOP AT NEURIPS   MONTREAL, CANADA
I have been awarded the travel award for the work 'Automatic Diagnosis of Short-Duration 12-Lead ECG using a Deep Convolutional Network' and had my expenses covered by the award.

Scholarships

SFVE-A mobility grant *2023*
FRENCH INSTITUTE OF SWEDEN   SWEDEN
I have been granted the Svensk Fransk Vetenskap–Anslag (SFVE-A) grant.

ELISE mobility grant *2023*
EUROPEAN NETWORK OF AI EXCELLENCE CENTRES   EUROPE
I have been granted for a research visit to Francis Bach group at ENS/INRIA during Spring 2023

CAPES-PRINT *2020-2021*
CAPES   BRAZIL
I have been granted a scholarship from the Brasilian Agency CAPES for internacionalization.

Split-site Ph.D. Scholarship *2019*
CNPQ   BRAZIL
I have been granted a scholarship from the Brasilian Agency CNPq for staying one year of my Ph.D. in Uppsala University, Sweden.

Ph.D. Scholarship *2018-2020*
CNPQ   BRAZIL
I have been granted a scholarship from the Brasilian Agency CNPq during my doctoral studies.

M.S. Scholarship *2016-2017*
CAPES   BRAZIL
I have been granted a scholarship from the Brasilian Agency CAPES during my master studies.

Supervision

Ph.D. students, co-supervisor

Daniel Gedon *Aug. 2019 - Aug. 2024 (estimated)*
UPPSALA UNIVERSITY, SWEDEN
Disentangled Representation Learning in Self-Supervised Models

M.Sc. students, supervisor

Oscar Larsson *Feb. 2022 - July 2022*
UPPSALA UNIVERSITY, SWEDEN
Generation and Detection of Adversarial Attacks in the Power Grid

Theogene Habineza *Jan. 2022 - June 2022*
UPPSALA UNIVERSITY, SWEDEN
Deep Learning-Based Risk Prediction of Atrial Fibrillation Using the 12-lead ECG

M.Sc. students, subject reviewer

Johan Millberg *Jan. 2023 - June 2023*
UPPSALA UNIVERSITY, SWEDEN
Evaluating clusters of financial time series

Christie Courtnage *Jan. 2022 - June 2022*
UPPSALA UNIVERSITY, SWEDEN
An extension to Semi-Supervised Learning using Shapley Value Data Valuation

Meenal Pathak *Feb. 2022 - Apr. 2022*
UPPSALA UNIVERSITY, SWEDEN
Automated Accounting using Machine Learning

Longer scientific visits

Ecolé Normale Superiore / INRIA *March 2023 - June 2023*
VISITING RESEARCHER PARIS, FRANCE
I was hosted by Francis Bach at the SIERRA team.

Uppsala University *September 2018 - September 2019*
VISITING PHD STUDENT UPPSALA, SWEDEN
I was hosted by Thomas B. Schön at the Department of Information Technology.

Teaching

Advanced Probabilistic Machine Learning *Fall - 2022*
UPPSALA UNIVERSITY, SWEDEN MSC AND PHD LEVEL, COURSE RESPONSIBLE AND LECTURER
Course details: 90 MSc (+11 PhD) students, 5 + 2.5 credits. *I was the main responsible for the course. I was involved in lecturing and in preparing the final exam. I also updated the course structure, lecture content and added exercises based on previous year feedback.*

Artificial Intelligence and Machine Learning *Spring - 2022*
WASP GRADUATE SCHOOL, SWEDEN PHD LEVEL, TEACHING ASSISTANT
Course details: 94 students, 6 credits. *I was responsible for the design of the course assignment.*

Advanced Probabilistic Machine Learning *Fall - 2021*
UPPSALA UNIVERSITY, SWEDEN MSC LEVEL, LECTURER
Course details: 125 MSc (+4 PhD) students, 5 + 2.5 credits. *I was involved in lecturing and in the preparation of the exam.*

The unreasonable effectiveness of overparameterized machine learning models *Fall - 2021*
UPPSALA UNIVERSITY, SWEDEN MSC AND PHD LEVEL, COURSE DEVELOPER AND ORGANIZER
Course details: 13 students, 3 credits. *I was the main responsible for the development of and organization of this new seminar course. I was involved in the choice of papers, in leading the discussion and was responsible for preparing all the assignments.*

Deep Learning *Spring - 2021*
UPPSALA UNIVERSITY, SWEDEN PHD LEVEL, TEACHING ASSISTANT
Course details: 54 students, 5 + 3 credits. *I was responsible for in preparing the assignment.*

Engenharia de Controle (Control Engineering)   *2nd - 2016*
Universidade Federal de Minas Gerais, Brazil   BSc level, Teaching assistant
Course details: 50 students, 6 credits. *I was responsible for exercise sections and developing the assignment. Also, I was involved in preparing the exam.*

Controle Digital (Digital Control)   *2nd - 2016*
Universidade Federal de Minas Gerais, Brazil   BSc level, Teaching assistant
Course details: 40 students, 4 credits. *I was responsible for exercise sections and developing the assignment. Also, I was involved in preparing the exam.*

Professional activity

Peer reviewing: journal papers

Communications Medicine (2023), *IEEE Transactions on Automatic Control* (2021), *Heart* (2021), *IEEE Transactions on Instrumentation and Measurement* (2021), *International Journal of System Science* (2021), *Proceedings of the National Academy of Sciences (PNAS)* (2020), *Automatica* (2020), *IEEE Transactions on Biomedical Engineering* (2020), *IEEE Control Systems Letters (L-CSS)* (2020), *Systems and Control Letters* (2020), *Chaos, Solutions and Fractals* (2020), *Chest* (2020), *Journal of Electrocardiology* (2020), *Journal of Control, Automation and Electrical Systems* (2015-2018),

Peer reviewing: conference papers

Learning for Dynamics and Control (L4DC) (2022), *International Conference on Artificial Intelligence and Statistics (AISTATS)* (2022), *IFAC Symposium on System Identification (SysId)* (2021), *Learning for Dynamics and Control (L4DC)* (2021), *European Control Conference (ECC)* (2021), *IEEE Conference on Decision and Control (CDC)* (2020), *IFAC World Conference* (2020), *American Control Conference* (2018), *International Conference on Modelling, Identification and Control* (2017), *IFAC World Conference* (2017),

Expert assignments

ELLIS (European Laboratory for Learning and Intelligent Systems) PhD Program: Recruitment evaluator *2020*
Co-chair at the session 'Parameter Estimation 1' at the 19th IFAC Symposium on System Identification *2021*

External examiner in Ph.D. and M.Sc. defenses

Najmeh Fayyazifar , Level: Ph.D.   *2022*
Edith Cowan University, Australia
Deep learning and neural architecture search for cardiac arrhythmias classification

Thiago de Almeida Ushikoshi , Level: M.Sc.   *2022*
Universidade Federal de Minas Gerails, Brazil
Learning Nonlinear Dynamics With Echo State Networks

Invited talks

Universities

Imperial College, UK @ Imperial Centre for Translational and Experimental Medicine *July, 2023 -* Robustness in large-scale machine learning and its relevance to AI-enabled ECG

IEEE EMBS @ Germany Chapter, Göttingen (online) *May, 2023 -* The Three Challenges of Using Deep Neural Networks in Electrocardiography

PUC Rio, Brazil @ Department of Mechanical Engineering *May, 2023 -* Revisitando o princípio da parcimônia na identificação de sistemas e aprendizado de máquina

INRIA Paris, France @ SIERRA team *March, 2023 -* Overparametrized linear regression under adversarial attacks

Seminars on Advances in Probabilistic Machine Learning @ Aalto University and ELLIS unit Helsinki
November 2022 - ADVERSARIAL ATTACKS IN LINEAR REGRESSION

University of British Columbia, Canada @ Christos Thrampoulidis group (Online) *June 2022* - OVER-PARAMETERIZED LINEAR REGRESSION UNDER ADVERSARIAL ATTACKS

University of Luxembourg @ Systems Control Group, LCSB (Online) *March 2022* - DEEP NEURAL NETWORKS FOR AUTOMATIC ECG ANALYSIS

Techinion, Israel @ AIMLab group (Online) *March 2021* - ARTIFICIAL INTELLIGENCE FOR ECG CLASSIFI-CATION AND PREDICTION OF THE RISK OF DEATH

Conferences

International Congress on Electrocardiology (Online) *April 2021* - ARTIFICIAL INTELLIGENCE FOR ECG CLASSIFCATION AND PREDICTION OF THE RISK OF DEATH

Open source contributions

Scipy team member *2017 - 2021*
I was one of the SciPy development team members. SciPy is one of the core scientific libraries in Python and I was invited to the core team for having contributed with the implementation of signal filters and optimization method. My GitHub account: https://github.com/antonior92 contain a complete list of my open-source contributions.

Additional work experience

Software Developer *May. 2017 - Aug. 2017*
GOOGLE SUMMER OF CODE SCIPY
I have successfully completed Google Summer of Code program under the mentorship of Matt Haberland, Nikolay Mayorov and Ralf Gommers. My project was the implementation of an interior-point solver for large-scale nonlinear programming problems. The result is the method trust-contr, now openly available as part of the open source scientific library SciPy, in Python.

Hardware Team Intern *Jan. 2015 - Dec. 2015*
INVENT VISION BELO HORIZONTE, BRAZIL
I was part of the hardware development team and worked designing FPGA-based cameras. The major project I have worked on while there was the design and implementation of a stereo camera.

Undergraduate Researcher *Jun. 2013 - Jan. 2015*
RESEARCH AND DEVELOPMENT PROJECT WITH PETROBRAS OIL COMPANY, UFMG BELO HORIZONTE, BRAZIL
I worked on the development of methods for identification of oil well mathematical models under the supervision of Professor Luis Antonio Aguirre. My position was funded by the Petrobras Oil Company through the Christiano Ottoni Foundation (FCO) in the modality bolsa de iniciação científica.

Additional education

Mini-course on Nonlinear System Identification 2019
EINDHOVEN UNIVERSITY OF TECHNOLOGY THE NETHERLANDS
I took part on the 3 days mincourse on nonlinear system identification to take place on Eindhoven University of Technology.

Probabilistic Graphical Models Specialization 2018
COURSERA (STANFORD) ONLINE
I have successfully completed the 3 online courses about probabilistic graphical models, titled 'Representation', 'Inference', 'Learning'.

Deep Learning Specialization 2018
COURSERA (DEEPLEARNING.AI) ONLINE
I have successfully completed the 5 online courses about deep learning offered in Coursera, 'Neural Networks and Deep Learning', 'Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization', 'Structuring Machine Learning Projects', 'Convolutional Neural Networks', 'Sequence Models'.

Languages

Portuguese (mother tongue)
English (fluent)
Spanish (intermediate knowledge)
Swedish (elementary knowledge)

Language certificates

Certificate in Advanced English (Council of Europe Level C1) - Cambridge English Language Assessment, 2014