

Curriculum Vitae

Antônio Horta Ribeiro

October 9, 2023

Current Position:

Postdoctoral Fellow
Uppsala University
Department of Information Technology,
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Academic Positions

Postdoctoral Fellow

DEPARTMENT OF INFORMATION TECHNOLOGY, UPPSALA UNIVERSITY

Feb. 2021 - Now

UPPSALA, SWEDEN

I am working under the supervision of Thomas Schön on the intersection of machine learning, signal processing, and control theory.

Postdoctoral Associate

DEPARTMENT OF COMPUTER SCIENCE, UFMG

Mar. 2020 - Feb. 2021

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 Brazilian 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

UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)

Aug. 2017 - Mar. 2020

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

UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)

Jan. 2016 - Jul. 2017

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

UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)

Jan. 2016 - Jul. 2017

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, electrical Drives, power electronics, system identification, electrical circuits, optimization and communications.

Awards

Benzelius award

ROYAL SOCIETY OF SCIENCES IN UPPSALA

2022

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

UNIVERSIDADE FEDERAL DE MINAS GERAIS

2021

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-Descend when Modeling Dynamics’.

Best Poster Award

2019

SCI LIFELAB 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

UGhent mobility grant

2023

GHENT UNIVERSITY - 10.000 EUR

SWEDEN

Dirk Deschrijver and I were awarded a grant to establish international research collaboration. The budget will cover the travel expenses of PhD students to visit me at Uppsala University and work on automated ECG analysis.

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 Brazilian Agency CAPES for internationalization.

Split-site Ph.D. Scholarship

2019

CNPq

BRAZIL

I have been granted a scholarship from the Brazilian 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 Brazilian Agency CNPq during my doctoral studies.

M.S. Scholarship

2016-2017

CAPES

BRAZIL

I have been granted a scholarship from the Brazilian Agency CAPES during my master studies.

Supervision

Ph.D. students, co-supervisor

Daniel Gedon

UPPSALA UNIVERSITY, SWEDEN

Disentangled Representation Learning in Self-Supervised Models

Aug. 2019 - Aug. 2024 (estimated)

M.Sc. students, supervisor

Oscar Larsson

UPPSALA UNIVERSITY, SWEDEN

Generation and Detection of Adversarial Attacks in the Power Grid

Feb. 2022 - July 2022

Theogene Habineza

UPPSALA UNIVERSITY, SWEDEN

Deep Learning-Based Risk Prediction of Atrial Fibrillation Using the 12-lead ECG

Jan. 2022 - June 2022

M.Sc. students, subject reviewer

Johan Millberg

UPPSALA UNIVERSITY, SWEDEN

Evaluating clusters of financial time series

Jan. 2023 - June 2023

Christie Courtnage

UPPSALA UNIVERSITY, SWEDEN

An extension to Semi-Supervised Learning using Shapley Value Data Valuation

Jan. 2022 - June 2022

Meenal Pathak

UPPSALA UNIVERSITY, SWEDEN

Automated Accounting using Machine Learning

Feb. 2022 - Apr. 2022

Longer scientific visits

Ecolé Normale Supérieure / INRIA

VISITING RESEARCHER

I was hosted by Francis Bach at the SIERRA team.

March 2023 - June 2023

PARIS, FRANCE

Uppsala University

VISITING PHD STUDENT

I was hosted by Thomas B. Schön at the Department of Information Technology.

September 2018 - September 2019

UPPSALA, SWEDEN

Teaching

Advanced Probabilistic Machine Learning

UPPSALA UNIVERSITY, SWEDEN

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.*

Fall - 2022

MSC AND PHD LEVEL, COURSE RESPONSIBLE AND LECTURER

Artificial Intelligence and Machine Learning

WASP GRADUATE SCHOOL, SWEDEN

Course details: 94 students, 6 credits. *I was responsible for the design of the course assignment.*

Spring - 2022

PHD LEVEL, TEACHING ASSISTANT

Advanced Probabilistic Machine Learning

UPPSALA UNIVERSITY, SWEDEN

Course details: 125 MSc (+4 PhD) students, 5 + 2.5 credits. *I was involved in lecturing and in the preparation of the exam.*

Fall - 2021

MSC LEVEL, LECTURER

The unreasonable effectiveness of overparameterized machine learning models

UPPSALA UNIVERSITY, SWEDEN

MSC AND PHD LEVEL, COURSE DEVELOPER AND ORGANIZER

Fall - 2021

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

UPPSALA UNIVERSITY, SWEDEN

Spring - 2021

PHD LEVEL, TEACHING ASSISTANT

Course details: 54 students, 5 + 3 credits. *I was responsible for in preparing the assignment.*

Engenharia de Controle (Control Engineering)

UNIVERSIDADE FEDERAL DE MINAS GERAIS, BRAZIL

2nd - 2016

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)

UNIVERSIDADE FEDERAL DE MINAS GERAIS, BRAZIL

2nd - 2016

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 GERAIS, BRAZIL

Learning Nonlinear Dynamics With Echo State Networks

Invited talks

Universities

Laboratório Nacional de Computação Científica @ Petrópolis, RJ, Brazil (online) July, 2023 - ATAQUES ADVERSÁRIAS EM MODELOS LINEARES

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* - OVERPARAMETERIZED LINEAR REGRESSION UNDER ADVERSARIAL ATTACKS

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

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

Conferences

International Congress on Electrocardiology (Online) *April 2021* - ARTIFICIAL INTELLIGENCE FOR ECG CLASSIFICATION 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-constr, 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 (DEEPLARNING.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