Curriculum Vitae

Antônio Horta Ribeiro

March 28, 2023

Current Position:
Postdoctoral Fellow
Uppsala University
Department of Information Technology,
Division of Systems and Control

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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 2022 (estimated)*
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

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

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

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

Techinion, 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 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 Mechine 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

Publication List

Bibliometrics

Journal Publications: 15
Conference Publications: 12
Workshop papers: 7
Theses: 3

Citations: 16 673
h-index: 11
i10-index: 11
According to Google Scholar (2023-02-22)

Scientific Database Identifiers

ORCID: 0000-0003-3632-8529
DBLP: 202/1699
SCOPUS ID: 57191699148
Google Scholar: Antonio H. Ribeiro

Working Manuscripts

[P1] Daniel Gedon, **Antônio H. Ribeiro**, Niklas Wahlström, and Thomas B. Schön. "Invertible Kernel PCA with Random Fourier Features". In: *Submitted to IEEE Signal Processing Letters (preprint: arxiv:2303.05043)* (Mar. 2023). DOI: 10.48550/arXiv.2303.05043.

[P2] Arunashis Sau, **Antônio H. Ribeiro**, Kathryn McGurk, Libor Pastika, Nikesh Bajaj, Maddalena Ardissino, Jun Yu Chen, Huiyi Wu, Xili Shi, Katerina Hnatkova, Sean Zheng, Annie Britton, Martin Shipley, Irena Andršová, Tomáš Novotný, Ester Sabino, Luana Giatti, Sandhi Barreto, Jonathan Waks, Daniel Kramer, Danilo Mandic, Nicholas Peters, Declan O'Regan, Marek Malik, James Ware, Antonio L. P. Ribeiro, and Fu Siong Ng. "Neural Network-Derived Electrocardiographic Features Have Prognostic Significance and Important Phenotypic and Genotypic Associations". In: *Submitted to Nature Medicine* (2023).

[P3] Cuili Zhang, Xiao Miao, Biqi Wang, **Antônio H Ribeiro**, Luisa Brant, Antonio L P Ribeiro, and Honghuang Lin. "Association of Lifestyle with Deep-Learning Based ECG-age". In: *Submitted to Frontiers in Cardiovascular Medicine* (2023).

[P4] Daniel Gedon, **Antonio H. Ribeiro**, and Thomas B. Schön. "No Double Descent in PCA: Training and Pre-Training in High Dimensions". In: *OpenReview* (2023).

[P5] Carl Jidling, Daniel Gedon, Thomas B. Schön, Claudia Di Lorenzo Oliveira, Clareci Silva Cardos, Ariela Mota Ferreira, Luana Giatti, Sandhi Maria Barreto, Ester C. Sabino, Antônio L. P. Ribeiro, and **Antônio H. Ribeiro**. "Screening for Chagas Disease from the Electrocardiogram Using a Deep Neural Network". In: *Submitted to Plos Neglected Tropical Diseases (preprint: medRxiv)* (2023). DOI: 10.1101/2023.01.24.23284930.

[P6] Thomas Lindow, Maren Maanja, Erik B Schelbert, **Antonio H Ribeiro**, Antonio Luiz P Ribeiro, Todd T Schlegel, and Martin Ugander. "Heart Age Gap by Explainable Advanced Electrocardiography Is Associated with Cardiovascular Risk Factors and Survival". In: *Submitted to The Lancet Digital Health* (2023).

[P7] Gianluigi Pillonetto, Aleksandr Aravkin, Daniel Gedon, Lennart Ljung, **Antonio H. Ribeiro**, and Thomas Bo Schön. "Deep Networks for System Identification: A Survey". In: *Submitted to Automatica (preprint: arXiv:2301.12832)* (2023). DOI: 10.48550/arXiv.2301.12832.

[P8] Luisa C C Brant, **Antônio H Ribeiro**, Marcelo M Pinto-Filho, Jelena Kornej, Sarah R. Preis, Benjamin Eromosele, Jared W. Magnani, Joanne M. Murabito, Martin G Larson, Emelia J Benjamin, Antonio L P Ribeiro, and Honghuang Lin. "Electrocardiographic Age Predicts Cardiovascular Events in Community: The Framingham Heart Study". In: *Accepted upon satisfactory revision at Circulation: Cardiovascular Quality and Outcomes* (2023).

[P9] Philipp Von Bachmann, Daniel Gedon, Fredrik K. Gustafsson, **Antônio H. Ribeiro**, Erik Lampa, Stefan Gustafsson, Johan Sundström, and Thomas B. Schön. "ECG-Based Electrolyte Prediction: Evaluating Regression and Probabilistic Methods". In: *arXiv:2212.13890* (Dec. 2022). DOI: 10.48550/arXiv.2212.13890.

[P10] Lei Lu, Tingting Zhu, **Antônio H. Ribeiro**, Lei Clifton, Erying Zhao, Antonio Luiz P. Ribeiro, Yuan-Ting Zhang, and David A. Clifton. "Knowledge Discovery with Electrocardiography Using Interpretable Deep Neural Networks". In: *Under review at Nature Comunications (preprint: medRxiv)* (Nov. 2022). DOI: 10.1101/2022.11.01.22281722.

[P11] Veer Sangha, Arash A. Nargesi, Lovedeep S. Dhingra, Bobak J. Mortazavi, **Antônio H. Ribeiro**, Cynthia A. Brandt, Edward J. Miller, Antonio Luiz P. Ribeiro, Eric J. Velazquez, Harlan M. Krumholz, and Rohan Khera. "Detection of Left Ventricular Systolic Dysfunction from Electrocardiographic Images". In: *Under review Circulation (preprint: medRxiv)* (June 2022). DOI: 10.1101/2022.06.04.22276000.

[P12] **Antônio H. Ribeiro**, Dave Zachariah, and Thomas B. Schön. "Surprises in Adversarially-Trained Linear Regression". In: *arXiv:2205.12695* (May 2022). DOI: 10.48550/arXiv.2205.12695.

Journal Papers

[J1] **Antônio H. Ribeiro** and Thomas B. Schön. "Overparameterized Linear Regression under Adversarial Attacks". In: *IEEE Transactions on Signal Processing* (2023). DOI: 10.1109/TSP.2023.3246228.

[J2] Eran Zvuloni, Jesse Read, **Antônio H. Ribeiro**, Antonio Luiz P. Ribeiro, and Joachim A. Behar. "On Merging Feature Engineering and Deep Learning for Diagnosis, Risk-Prediction and Age Estimation Based on the 12-Lead ECG". In: *IEEE Transactions on Biomedical Engineering* (Jan. 2023). DOI: 10.1109/TBME.2023.3239527.

[J3] Stefan Gustafsson, Daniel Gedon, Erik Lampa, **Antônio H. Ribeiro**, Martin J. Holzmann, Thomas B. Schön, and Johan Sundström. "Development and Validation of Deep Learning ECG-based Prediction of Myocardial Infarction in Emergency Department Patients". In: *Scientific Reports* 12.1 (Nov. 2022), p. 19615. DOI: 10.1038/s41598-022-24254-x.

[J4] Veer Sangha, Bobak J. Mortazavi, Adrian D. Haimovich, **Antônio H. Ribeiro**, Cynthia A. Brandt, Daniel L. Jacoby, Wade L. Schulz, Harlan M. Krumholz, Antonio Luiz P. Ribeiro, and Rohan Khera. "Automated Multilabel Diagnosis on Electrocardiographic Images and Signals". In: *Nature Communications* 13 (2022), p. 1583. DOI: 10.1038/s41467-022-29153-3.

[J5] Gabriela M. M. Paixão, Emilly M. Lima, Paulo R. Gomes, Derick M. Oliveira, Manoel H. Ribeiro, Jamil S. Nascimento, **Antonio H. Ribeiro**, Peter W. Macfarlane, and Antonio L. P. Ribeiro. "Electrocardiographic Predictors of Mortality: Data from a Primary Care Tele-Electrocardiography Cohort of Brazilian Patients". In: *Hearts* 2.4 (Dec. 2021), pp. 449–458. DOI: 10.3390/hearts2040035.

[J6] Emilly M. Lima, **Antônio H. Ribeiro**, Gabriela MM Paixão, Manoel Horta Ribeiro, Marcelo M. Pinto Filho, Paulo R. Gomes, Derick M. Oliveira, Ester C. Sabino, Bruce B. Duncan, Luana Giatti, Sandhi M. Barreto, Wagner Meira, Thomas B. Schön, and Antonio Luiz P. Ribeiro. "Deep Neural Network Estimated Electrocardiographic-Age as a Mortality Predictor". In: *Nature Communications* 12 (2021). DOI: 10.1038/s41467-021-25351-7.

[J7] Shany Biton, Sheina Gendelman, **Antônio H Ribeiro**, Gabriela Miana, Carla Moreira, Antonio Luiz P Ribeiro, and Joachim A Behar. "Atrial Fibrillation Risk Prediction from the 12-Lead ECG Using Digital Biomarkers and Deep Representation Learning". In: *European Heart Journal - Digital Health* (2021). DOI: 10.1093/ehjdh/ztab071.

[J8] Wagner Meira Jr, Antonio L. P. Ribeiro, Derick M. Oliveira, and **Antonio H. Ribeiro**. "Contextualized Interpretable Machine Learning for Medical Diagnosis". In: *Communications of the ACM* (2020). DOI: 10.1145/3416965.

[J9] Gabriela M. M. Paixão, Luis Gustavo S. Silva, Paulo R. Gomes, Emilly M. Lima, Milton P. F. Ferreira, Derick M. Oliveira, Manoel H. Ribeiro, **Antonio H. Ribeiro**, Jamil S. Nascimento, Jéssica A. Canazart, Leonardo B. Ribeiro, Emelia J. Benjamin, Peter W. Macfarlane, Milena S. Marcolino, and Antonio L. Ribeiro. "Evaluation of Mortality in Atrial Fibrillation: Clinical Outcomes in Digital Electrocardiography (CODE) Study". In: *Global Heart* 15.1 (July 2020), p. 48. DOI: 10.5334/gh.772.

[J10] **Antônio H. Ribeiro**, Koen Tiels, Jack Umenberger, Thomas B. Schön, and Luis A. Aguirre. "On the Smoothness of Nonlinear System Identification". In: *Automatica* 121 (Nov. 2020), p. 109158. DOI: 10.1016/j.automatica.2020.109158.

[J11] **Antônio H. Ribeiro**, Manoel Horta Ribeiro, Gabriela M. M. Paixão, Derick M. Oliveira, Paulo R. Gomes, Jéssica A. Canazart, Milton P. S. Ferreira, Carl R. Andersson, Peter W. Macfarlane, Wagner Meira Jr., Thomas B. Schön, and Antonio Luiz P. Ribeiro. "Automatic Diagnosis of the 12-Lead ECG Using a Deep Neural Network". In: *Nature Communications* 11.1 (2020), p. 1760. DOI: 10.1038/s41467-020-15432-4.

[J12] Pauli Virtanen, Ralf Gommers, Travis E. Oliphant, Matt Haberland, Tyler Reddy, David Cournapeau, Evgeni Burovski, Pearu Peterson, Warren Weckesser, Jonathan Bright, Stéfan J. van der Walt, Matthew Brett, Joshua Wilson, K. Jarrod Millman, Nikolay Mayorov, Andrew R. J. Nelson, Eric Jones, Robert Kern, Eric Larson, C. J. Carey, İlhan Polat, Yu Feng, Eric W. Moore, Jake VanderPlas, Denis Laxalde, Josef Perktold, Robert Cimrman, Ian Henriksen, E. A. Quintero, Charles R. Harris, Anne M. Archibald, **Antônio H. Ribeiro**, Fabian Pedregosa, Paul van Mulbregt, and SciPy 1.0 Contributors. "SciPy 1.0–Fundamental Algorithms for Scientific Computing in Python". In: *Nature Methods* 17.3 (2020), pp. 261–272. DOI: 10.1038/s41592-019-0686-2.

[J13] Antonio Luiz P. Ribeiro, Gabriela M. M. Paixão, Paulo R. Gomes, Manoel Horta Ribeiro, **Antônio H. Ribeiro**, Jéssica A. Canazart, Derick M. Oliveira, Milton P. Ferreira, Emilly M. Lima, Jermana Lopes de Moraes, Nathalia Castro, Leonardo B. Ribeiro, and Peter W. MacFarlane. "Tele-Electrocardiography and Bigdata: The CODE (Clinical Outcomes in Digital Electrocardiography) Study". In: *Journal of Electrocardiology* (Sept. 2019). DOI: 10/gf7pwg.

[J14] Gabriela M. M. Paixão, Emilly M. Lima, Paulo R. Gomes, Milton P. Ferreira, Derick M. Oliveira, Manoel Horta Ribeiro, **Antônio H. Ribeiro**, Jamil Nascimento, Jéssica A. Canazart, Gustavo Cardoso, Leonardo B. Ribeiro, and Antonio Luiz P. Ribeiro. "Evaluation of Mortality in Bundle Branch Block Patients from an Electronic Cohort: Clinical Outcomes in Digital Electrocardiography (CODE) Study". In: *Journal of Electrocardiology* (Sept. 2019). DOI: 10.1016/j.jelectrocard.2019.09.004.

[J15] **Antônio H. Ribeiro** and Luis A. Aguirre. ""Parallel Training Considered Harmful?": Comparing Series-Parallel and Parallel Feedforward Network Training". In: *Neurocomputing* 316 (Nov. 2018), pp. 222–231. DOI: 10.1016/j.neucom.2018.07.071.

Conference Papers

[C1] Johannes N. Hendriks, Fredrik K. Gustafsson, **Antônio H. Ribeiro**, Adrian G. Wills, and Thomas B. Schön. "Deep Energy-Based NARX Models". In: *Proceedings of the 19th IFAC Symposium on System Identification (SYSID) - IFAC-PapersOnLine* 54.7 (2021), pp. 505–510. DOI: 10.1016/j.ifacol.2021.08.410.

[C2] **Antônio H. Ribeiro**, Johannes N. Hendriks, Adrian G. Wills, and Thomas B. Schön. "Beyond Occam's Razor in System Identification: Double-Descent When Modeling Dynamics". In: *Proceedings of the 19th IFAC Symposium on System Identification (SYSID) - IFAC-PapersOnLine*. Vol. 54. Elsevier, 2021, pp. 97–102. DOI: 10.1016/j.ifacol.2021.08.341.

[C3] **Antonio H. Ribeiro** and Thomas B. Schon. "How Convolutional Neural Networks Deal with Aliasing". In: *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2021, pp. 2755–2759. DOI: 10.1109/ICASSP39728.2021.9414627.

[C4] Daniel Gedon, **Antônio H. Ribeiro**, Niklas Wahlström, and Thomas B. Schön. "First Steps Towards Self-Supervised Pretraining of the 12-Lead ECG". In: *Computing in Cardiology (CinC)*. Vol. 48. Sept. 2021, pp. 1–4. DOI: 10.23919/CinC53138.2021.9662748.

[C5] Derick M. Oliveira, **Antônio H. Ribeiro**, João A. O. Pedrosa, Gabriela M.M. Paixao, Antonio Luiz P. Ribeiro, and Wagner Meira Jr. "Explaining End-to-End ECG Automated Diagnosis Using Contextual Features". In: *Machine Learning and Knowledge Discovery in Databases. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*. Vol. 12461. Lecture Notes in Computer Science}. Ghent, Belgium: Springer, Sept. 2020, pp. 204–219. DOI: 10.1007/978-3-030-67670-4_13.

[C6] **Antonio H Ribeiro**, Daniel Gedon, Daniel Martins Teixeira, Manoel Horta Ribeiro, Antonio L Pinho Ribeiro, Thomas B Schon, and Wagner Meira Jr. "Automatic 12-Lead ECG Classification Using a Convolutional Network Ensemble". In: *2020 Computing in Cardiology (CinC)*. 2020. DOI: 10.22489/CinC.2020.130.

[C7] **Antônio H. Ribeiro**, Koen Tiels, Luis A. Aguirre, and Thomas B. Schön. "Beyond Exploding and Vanishing Gradients: Attractors and Smoothness in the Analysis of Recurrent Neural Network Training". In: *Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics (AISTATS), PMLR*. Vol. 108. 2020, pp. 2370–2380.

[C8] Derick M Oliveira, **Antonio H Ribeiro**, Joao A O Pedrosa, Gabriela M M Paixao, Antonio L Ribeiro, and Wagner Meira Jr. "Explaining Black-Box Automated Electrocardiogram Classification to Cardiologists". In: *2020 Computing in Cardiology (CinC)*. Vol. 47. 2020. DOI: 10.22489/CinC.2020.452.

[C9] Carl Andersson, **Antônio H. Ribeiro**, Koen Tiels, Niklas Wahlström, and Thomas B. Schön. "Deep Convolutional Networks in System Identification". In: *Proceedings of the 58th IEEE Conference on Decision and Control (CDC)* (Sept. 2019), pp. 3670–3676. DOI: 10.1109/CDC40024.2019.9030219.

[C10] **Antonio H. Ribeiro** and Luis A. Aguirre. "Lasso Regularization Paths for NARMAX Models via Coordinate Descent". In: *2018 Annual American Control Conference (ACC)*. June 2018, pp. 5268–5273. DOI: 10.23919/ACC.2018.8430924.

[C11] **Antônio H. Ribeiro** and Luis A. Aguirre. "Shooting Methods for Parameter Estimation of Output Error Models". In: *Proceedings of the 20th IFAC World Congress. IFAC-PapersOnLine* 50.1 (July 2017), pp. 13998–14003. DOI: 10.1016/j.ifacol.2017.08.2421.

[C12] **Antônio H. Ribeiro** and Luis A. Aguirre. "Selecting Transients Automatically for the Identification of Models for an Oil Well". In: *Proceedings of the 2nd IFAC Workshop on Automatic Control in Offshore Oil and Gas Production. IFAC-PapersOnLine* 48.6 (2015), pp. 154–158. DOI: 10.1016/j.ifacol.2015.08.024.

Workshop Papers and Conference Extended Abstracts

[W1] Daniel Gedon, Stefan Gustafsson, Erik Lampa, **Antônio H. Ribeiro**, Martin J. Holzmann, Thomas B. Schön, and Johan Sundström. "ResNet-based ECG Diagnosis of Myocardial Infarction in the Emergency Department". In: *Machine Learning from Ground Truth: New Medical Imaging Datasets for Unsolved Medical Problems Workshop at NeurIPS*. 2021.

[W2] Johannes N. Hendriks, Fredrik K. Gustafsson, **Antônio H. Ribeiro**, Adrian G. Wills, and Thomas B. Schön. "Deep Energy-Based NARX Models". In: *Workshop on Nonlinear System Identification* (2021).

[W3] **Antônio H. Ribeiro**, Johannes N. Hendriks, Adrian G. Wills, and Thomas B. Schön. "Beyond Occam's Razor in System Identification: Double-Descent When Modeling Dynamics". In: *Workshop on Nonlinear System Identification*. 2021.

[W4] **Antonio H Ribeiro** and Thomas B Schön. "Overparametrized Regression Under L2 Adversarial Attacks". In: *Workshop on the Theory of Overparameterized Machine Learning (TOPML)*. Apr. 2021.

[W5] **Antonio H Ribeiro**, Carl Andersson, Koen Tiels, Niklas Wahlstrom, and Thomas B Schon. "Deep Convolutional Networks Are Useful in System Identification". In: *Workshop on Nonlinear System Identification* (2019).

[W6] **Antônio H. Ribeiro**, Manoel Horta Ribeiro, Gabriela Paixão, Derick Oliveira, Paulo R. Gomes, Jéssica A. Canazart, Milton Pifano, Wagner Meira Jr., Thomas B. Schön, and Antonio Luiz Ribeiro. "Automatic Diagnosis of Short-Duration 12-Lead ECG Using a Deep Convolutional Network". In: *Machine Learning for Health (ML4H) Workshop at NeurIPS* (2018).

[W7] Gabriela Paixao, Luis Gustavo Silva e Silva, Paulo R. Gomes, Milton Ferreira, Derick Oliveira, Manoel Horta Ribeiro, **Antonio H. Ribeiro**, Jamil Nascimento, Gustavo Cardoso, Rodrigo Araujo, Bruno Santos, Jessica Canazart, Leonardo Ribeiro, and Antonio L. Ribeiro. "Clinical Outcomes in Digital Electrocardiography: Evaluation of Mortality in Atrial Fibrillation (Code Study)". In: *Circulation. Abstracts from American Heart Association's.* 138.Suppl_1 (Nov. 2018), A16594–A16594.

National Conference Papers (in Portuguese)

[N1] **Antônio H. Ribeiro** and Luis A. Aguirre. "Relaçoes Estáticas de Modelos NARX MISO e Sua Representaçao de Hammerstein". In: *XX Congresso Brasileiro de Automática*. 2014.

Thesis

[T1] **Antônio H. Ribeiro**. “Learning Nonlinear Differentiable Models for Signals and Systems: With Applications”. PhD thesis. Belo Horizonte, Brazil: Universidade Federal de Minas Gerais, 2020.

[T2] **Antônio H. Ribeiro**. “Recurrent Structures in System Identification”. MSc Dissertation. Belo Horizonte, Brazil: Universidade Federal de Minas Gerais, 2017.

[T3] **Antonio H. Ribeiro**. “Implementação de Uma Câmera Estéreo”. BSc Thesis. Belo Horizonte, Brazil: Universidade Federal de Minas Gerais, Dec. 2015.