

# ADÈLE HELENA RIBEIRO



## PERSONAL INFORMATION

*email* [adele@cs.columbia.edu](mailto:adele@cs.columbia.edu)  
*website* <https://adele.github.io/>

## EDUCATION

*Doctor of Philosophy in Computer Science*  
November 2018 University of São Paulo, Brazil  
Institution: Institute of Mathematics and Statistics.  
PhD's dissertation: *Identification of Causality in Genetics and Neuroscience*.  
DOI: [10.11606/T.45.2019.tde-15032019-190109](https://doi.org/10.11606/T.45.2019.tde-15032019-190109)  
Advisor: Prof. André Fujita.  
Co-Advisor: Prof. Júlia Maria Pavan Soler

*Research Internship*  
Fall 2017 Princeton University, USA  
Institution: Neuroscience Institute  
Research Project: *Deep Learning algorithms for pose representation and dynamics modeling of marmoset monkeys*.  
Supervisor: Prof. Asif A. Ghazanfar.

*Master of Science in Computer Science*  
Jun 2014 University of São Paulo, Brazil  
Institution: Institute of Mathematics and Statistics.  
Master's thesis: *Gene expression analysis taking into account measurement errors and application to real data*. DOI: [10.11606/D.45.2014.tde-04082014-163616](https://doi.org/10.11606/D.45.2014.tde-04082014-163616).  
Advisor: Prof. Roberto Hirata Jr.

*Bachelor of Science in Computational and Applied Mathematics*  
Dec 2011 University of São Paulo, Brazil  
Institution: Institute of Mathematics and Statistics.  
Senior thesis: *Analysis of Pyroelectric Infrared (PIR) sensor output signals*.  
Advisor: Prof. Roberto Hirata Jr.

## ACADEMIC POSITIONS

*Postdoctoral Researcher*  
Sept 2019 – Present Columbia University, USA  
Institution: Causal AI Lab, Department of Computer Science and Data Science Institute.  
Research project: *Causal Health Sciences – From Biased and Heterogeneous Data Collections to Personalized and Improved Patient Outcomes*.  
Supervisor: Prof. Elias Bareinboim.

*Postdoctoral Researcher*  
Jan 2019 – Aug 2019 Heart Institute, University of São Paulo, Brazil  
Institution: Laboratory of Genetics and Molecular Cardiology.  
Research project: *Deep Learning for 12-lead ECG Classification*.  
Supervisor: Prof. José Eduardo Krieger.

## PUBLICATIONS

*Research Article* Anand, T.\*, **Ribeiro, A. H.\***, Tian, J., Bareinboim, E. (2021). *Effect Identification in Causal Diagrams with Clustered Variables*. Columbia CausalAI Laboratory, [Technical Report, R-77](#)

*Research Article* **Ribeiro, A. H.\***, Vidal, M. C., Sato, J. R., and Fujita, A. (2021). *Granger Causality among Graphs and Application to Functional Brain Connectivity in Autism Spectrum Disorder*. *Entropy*. 23(9):1024. DOI: [10.3390/e23091204](https://doi.org/10.3390/e23091204)

*Research Article* **Ribeiro, A. H.\***, Soler, J. M. P.. (2020). *Learning Genetic and Environmental Graphical Models from Gaussian Family Data*. *Statistics in Medicine*. 39: 2403– 2422. DOI: [10.1002/sim.8545](https://doi.org/10.1002/sim.8545)

*Research Article* **Ribeiro, A. H.\***, Gutierrez, M. A., and Krieger, J. E. (2020). *Deep learning approach for normal versus abnormal 12-lead ECG images classification*. Manuscript in preparation.

- Research Article* **Ribeiro, A. H.\***, Soler, J. M. P., R. Hirata Jr.. (2019). *Variance-Preserving Estimation of Intensity Values Obtained from Omics Experiments*. *Frontiers in Genetics*, 10:855. DOI: [10.3389/fgene.2019.00855](https://doi.org/10.3389/fgene.2019.00855).
- Research Article* **Ribeiro, A. H.\***, Lotufo, P., Fujita, A., Goulart, A., Chor, D., Mill, J. G., Bensenor, I., Santos, I. S. (2017). *Association Between Short-Term Systolic Blood Pressure Variability and Carotid Intima-Media Thickness in ELSA-Brasil Baseline*. *American Journal of Hypertension*, 30:954–960. DOI: [10.1093/ajh/hpx076](https://doi.org/10.1093/ajh/hpx076).
- Springer Book Chapter* **Ribeiro, A. H.\***, Soler, J. M. P., Neto, E. C., Fujita, A. (2016). *Causal Inference and Structure Learning of Genotype-Phenotype Networks Using Genetic Variation*. In *Big Data Analytics in Genomics*. Springer International Publishing, New York, p. 89-143. DOI: [10.1007/978-3-319-41279-5-3](https://doi.org/10.1007/978-3-319-41279-5-3).

## FELLOWSHIPS AND SCHOLARSHIPS

- DAAD* Sep 2021 DAAD Postdoc-NeT-AI Fellowship  
DAAD Artificial Intelligence Networking (AInet) Fellowship, by the Federal Ministry of Education and Research, Germany
- Columbia University* Sep 2019– Aug 2022 Postdoctoral Research Fellowship  
Causal Artificial Intelligence Lab, Department of Computer Science and Data Science Institute - Columbia University
- CAPES* Jan 2019– Aug 2019 Postdoctoral Research Fellowship  
Coordination for the Improvement of Higher Education Personnel.
- CAPES* Sep 2017 – Dec 2017 Ph.D. Visiting Student at Princeton University  
Scholarship from Coordination for the Improvement of Higher Education Personnel for research internship at Princeton Neuroscience Institute.
- CAPES* Aug 2014– Jul 2018 PhD Graduate Research Scholarship  
Ph.D. Scholarship from Coordination for the Improvement of Higher Education Personnel for Doctorate of Philosophy in Computer Science.
- CAPES/CNPq* Mar 2012 – Feb 2014 MSc Graduate Research Scholarship  
Graduate Scholarship from National Council of Technological and Scientific Development for Master of Science in Computer Science

## PARTICIPATION IN CONFERENCES AND WORKSHOPS

- Research Poster (Best Poster Award)* October 2018 X-Meeting - 14th International Conference of the AB3C, São Pedro, SP, Brazil  
**Ribeiro, A. H.**, Sato, J. R., Fujita, A. Granger Causality Between Graphs and Applications in Functional Brain Networks. *X-Meeting - 14th International Conference of the AB3C*, 2018, São Pedro, SP, Brazil. (Poster Presentation)
- Reviewer* September 2018 XXXVIII-th CNMAC, Campinas, SP, Brazil  
XXXVIII-th National Congress of Applied and Computational Mathematics – CNMAC, 2018, at the IMECC, UNICAMP, Campinas, SP, Brazil.
- Oral Presentation* July 2018 XXIXth International Biometric Conference, Spain  
**Ribeiro, A. H.**, Soler, J. M. P., Fujita, A. Learning Genetic and Environmental Causal Graphical Models in Family-Based Studies. *XIXth International Biometric Conference*, 2018, Barcelona, Spain. (Conference Abstract)
- Educational Poster* July 2017 3º Congresso de Graduação da Universidade de São Paulo  
Soler, J. M. P., **Ribeiro, A. H.**, Jahnke, M. R.. A produção da cerveja produzindo conhecimento. *3º Congresso de Graduação da USP*, 2017, SP, Brazil. (Poster Presentation)
- Conference Abstract* July 2016 XXVIII-th International Biometric Conference, Canada.  
**Ribeiro, A. H.**, Soler, J. M. P., Fujita, A. A Comparative Study of Algorithms for Learning Causal Genotype-Phenotype Networks. *Abstracts for the XXVIIIth International Biometric Conference*, 10-15 July, 2016, Victoria, British Columbia, Canada, International Biometric Society. ISBN 978-0-9821919-4-1. (Poster Presentation)

- May 2015 SID 2015, 74th Annual Meeting of the Society for Investigative Dermatology, Atlanta, GA, USA.
- Conference Abstract Swinka, BB, Carvalho, CM, Weihermann, A, Schuck, DC, Boldrini, N, Silva, VV, Costa, MT, **Ribeiro, AH**, Fujita, A, Brohem CA, and Lorencini M. Analysis of extracellular-matrix and cell-adhesion genes modulated by mechanical massage applied in combination with a cosmetic emulsion. *Supplement issue of the Journal of Investigative Dermatology, Epidermal Structure & Barrier Function*, v. 135, p. S58-S69, 2015. DOI: [10.1038/jid.2015.71](https://doi.org/10.1038/jid.2015.71)
- October 2014 ISCB-Latin America X-Meeting on Bioinformatics with BSB and SoiBio, Belo Horizonte, MG, Brazil
- Research Poster **Ribeiro, A. H.**, Hirata Jr., R., Soler, J. M. P. Two-color microarray data analysis taking into account probe-level inaccuracies. *ISCB-Latin America X-Meeting on Bioinformatics with BSB and SoiBio*, 2014, Belo Horizonte, MG, Brazil. (Poster Presentation)

## INVITED TALKS, SHORT COURSES, AND TUTORIALS

- Dec 2021 - Forthcoming Effect Identification in Cluster Causal Diagrams
- Invited Talk **Ribeiro, A. H.** *WHY-21 Workshop at NeurIPS - Causal Inference & Machine Learning: Why now?*, NeurIPS 2021, Virtual Conference.
- Nov 2021 Causal Inference and the Data-Fusion Problem
- Invited Talk **Ribeiro, A. H.** *Laboratory of Epidemiology & Population Science (LEPS) at the National Institute on Aging (NIA)*
- Nov 2021 Developing causal AI: its importance and an overview
- Invited Talk **Ribeiro, A. H.** and Bareinboim, E.. *OECD workshop on AI and the productivity of science.*
- Sep 2021 Causal Inference and Data-Fusion
- Invited Lecture **Ribeiro, A. H.** *Graduate Seminars Series - Statistics Department, University of Brasilia (UnB), Brasilia, Federal District, Brazil.*
- July 2021 Causal Data Science: An Introduction to Causal Inference and Data Fusion
- 3-hour Tutorial **Ribeiro, A. H.**, Bareinboim, E. *11th Lisbon Machine Learning Summer School (LxMLS - 2021). Virtual Conference.*
- Jun 2021 Causal Inference from Observational Studies
- Invited Lecture **Ribeiro, A. H.** *Perspectives in Statistics, Statistics Department, University of Sao Paulo (IME - USP), Sao Paulo, SP, Brazil.*
- December 2020 Causal Inference in the Health Sciences.
- 3-hour Tutorial **Ribeiro, A. H.**, Adibuzzaman, M., Bareinboim, E.. *Seventy-Sixth (76th) Annual Deming Conference on Applied Statistics. Virtual Conference.*
- November 2020 Causal Inference in the Health Sciences.
- 3.5-hour Tutorial **Ribeiro, A. H.**, Adibuzzaman, M., Bareinboim, E.. *American Medical Informatics Association (AMIA 2020) Virtual Annual Symposium.*
- Oct 2020 Learning Genetic and Environmental Probabilistic Graphical Models from Gaussian Family Data.
- Invited Lecture **Ribeiro, A. H.** *Graduate Seminars Series - Biostatistics and Biometrics, Federal University of Sao Carlos and University of Sao Paulo (UFSCar - USP), Sao Carlos, SP, Brazil*
- Oct 2020 Causal Inference from Observational Studies
- Invited Lecture **Ribeiro, A. H.** *Graduate Seminars Series - Statistics, Sao Paulo State University - UNESP, Botucatu, SP, Brazil*
- Jan 2017 Dimensionality Reduction and Structure Learning. with Applications to Genomics
- 9-hour Short Course **Ribeiro, A. H.**, Soler, J. M. P. *Graduate Summer School at the São Paulo State University - UNESP, Presidente Prudente, Brazil*
- May 2016 Dimensionality Reduction Applied to Genomics
- 4-hour Short Course **Ribeiro, A. H.**, Soler, J. M. P. *61ª Reunião Anual da Região Brasileira da Sociedade Internacional de Biometria (RBras), Bahia.*

## TEACHING EXPERIENCE

### ASSISTANT PROFESSOR

Feb 2018–Jul 2018      Software Design using Python  
Computer Engineering Department - Insper (Institute of Education and Research), SP, Brazil.

### TEACHING ASSISTANT

Mar 2017–Jul 2017      Statistical Design of Experiments  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Aug 2016–Dec 2016      Multivariate Data Analysis  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Mar 2016–Jul 2016      Statistical Methods for Genetics and Genomics  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Aug 2015–Dec 2015      Multivariate Data Analysis  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Mar 2015–Jul 2015      Mathematics, Architecture and Design  
Architecture and Urbanism College - University of São Paulo, Brazil.

Aug 2014–Dec 2014      Statistical techniques, programming and simulation  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Mar 2014–Jul 2014      Numerical Calculus with Applications in Physics  
Institute of Astronomy, Geophysics and Atmospheric Sciences - University of São Paulo, Brazil.

Aug 2013–Dec 2013      Mathematical Modeling  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Mar 2013–Jul 2013      Introduction to Computer Programming  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Aug 2012–Dec 2012      Linear Programming  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

Mar 2012–Jul 2012      Numerical Methods for Linear Algebra  
Institute of Mathematics and Statistics - University of São Paulo, Brazil.

## OPEN-SOURCE LIBRARIES

2018 – Present  
*R package*      FamilyBasedPGMs: Methods for Learning Genetic and Environmental Graphical Models from Gaussian Family Data. Repository: <https://github.com/adele/FamilyBasedPGMs>

2018 – Present  
*R package*      omicsMA: Variance-Preserving Estimation and Normalization of M-A Values from Omics Experiments. Repository: <https://github.com/adele/omicsMA>

## OTHER SKILLS

*Programming Languages*      Python, R, Matlab, C#, C++, C, Java, Ruby, PHP, ADA, APQ, Corba, MySQL, PostgreSQL.  
*Languages*      PORTUGUESE · Native language.  
                                 ENGLISH · Fluent.  
                                 JAPANESE · Basic reading, listening, and speaking.