

Curriculum Vitae

Luis Torgo

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Career Highlights

Luis Torgo is a Canada Research Chair (Tier 1) on Spatiotemporal Ocean Data Analytics and a Professor of Computer Science at the [Faculty of Computer Science](#) of the [Dalhousie University, Canada](#), an Associate Professor of the Department of Computer Science of the [Faculty of Sciences](#) of the [University of Porto, Portugal](#). He is the Deputy Director of the [Institute for Big Data Analytics](#) at Dalhousie, a senior researcher of [LIAAD / INESC Tec](#), and an associate member of the [Artificial Intelligence Institute](#) of the [University of Waikato](#).

Luis Torgo is also an invited professor of the [Stern Business School](#) of the [New York University](#) where he has been collaborating since 2014 in the [Master of Science in Business Analytics](#).

He has been doing research in the area of Data Mining and Machine Learning since 1990, and has published over 100 papers in several forums of these areas. Luis Torgo is the author of the widely acclaimed *Data Mining with R* book published by CRC Press in 2010 with a strongly revised [second edition](#) that appeared in January of 2017. He has been involved in many research projects under different roles and involving different types of organizations.

His current broad research interests revolve around analyzing data from dynamic environments, with a particular focus on time and space-time dependent data sets, in the search for unexpected events. In terms of application domains his research is frequently linked with ecological/biological as well as financial domains.

Luis Torgo main contributions to the state of the art on data mining and machine learning are related with tree-based regression methods and more recently with utility-based forecasting methods.

He has a strong experience of teaching different subjects at different academic levels but also in non-academic settings. He is frequently invited for giving short courses on using R for data mining around the world.

Luis Torgo is the CEO and one of the founding partners of [KNOYDA](#) a company devoted to training and consulting within data science.

1 Qualifications

- *2000*, [Ph.D. on Computer Science](#), Faculty of Sciences, University of Porto
- *1994*, Summer School on Artificial Intelligence for Multi-Agent Systems: methodologies and applications , Troia, Portugal
- *1992*, Pedagogical and Scientific abilities examination at the Faculty of Economics of the University of Porto (equivalent to MSc. by Portuguese regulations)

- 1991, Summer School on Advanced Topics in Artificial Intelligence, Czech Republic
- 1989, Degree in Systems and Informatics Engineering from the [University of Minho](#), Portugal

2 Professional Experience

- [2020 – ...], Deputy Director of the Institute for Big Data Analytics at the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2020 – ...], Head of the Research Cluster on Big Data Analytics, Artificial Intelligence and Machine Learning at the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2019 – ...], Tier 1 Canada Research Chair on Spatiotemporal Data Analytics at the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2018 – ...], Professor of the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2009 – ...], Associate Professor of the Department of Computer Science of the [Faculty of Sciences](#) of the [University of Porto](#), Portugal
- [2007 – ...], Senior Researcher of the [Laboratory of Artificial Intelligence and Data Analysis](#) belonging to the [INESC Tec](#) Associated Lab, Portugal
- [2000 – 2009], Assistant Professor of the [Faculty of Economics](#) of the [University of Porto](#), Portugal
- [1993 – 2000], Assistant of the [Faculty of Economics](#) of the [University of Porto](#), Portugal
- [1989 – 2007], Researcher of the [Laboratory of Artificial Intelligence and Computer Science \(LIACC\)](#) of the [University of Porto](#), Portugal

3 Teaching Activities

3.1 Faculty Subjects

Undergraduate Level

- [2019/20 – ...]
Foundations of Data Science using R (CSCI3141)
Faculty of Computer Science, Dalhousie University , *responsible*
- [2015/16 – 2017/18]
Computers Laboratory

Degree on Computer Science and Master Degree in Network and Information Systems Engineering, Faculty of Sciences, University of Porto, *responsible*

- [2015/16]
Initiation to Scientific Research
Degree on Computer Science and Master Degree in Network and Information Systems Engineering, Faculty of Sciences, University of Porto, *responsible*
- [2012/13 – 2015/16]
Data Structures and Algorithms
Offered to several degree programs of the Faculty of Sciences, University of Porto, *member of the team*
- [2009/10 – 2011/12]
Functional Programming
Degree on Computer Science and Master's Degree in Network and Information Systems Engineering, Faculty of Sciences, University of Porto, *member of the team*
- [2011/12 – 2015/16]
Introduction to Programming
Offered to several degree programs of the Faculty of Sciences, University of Porto, *member of the team*
- [2009/10 – 2010/2011]
Introduction to Programming
Offered to several degree programs of the Faculty of Sciences, University of Porto, *responsible*
- [2008/09 – 2011/12]
Data Structures
Degree on Computer Science and Master Degree in Network and Information Systems Engineering, Faculty of Sciences, University of Porto, *member of the team*
- [2006/07]
Informatics
Degree in Economics, Faculty of Economics, University of Porto, *responsible*
- [2004/05 – 2008/09]
Applied Informatics
Degree in Economics, Faculty of Economics, University of Porto, *member of the team*
- [1990/91- 2004/05]
Informatics
Degree in Economics, Faculty of Economics, University of Porto, *member of the team*

- [1989 – 2007]
Complements of Artificial Intelligence
Degree in Computer Science, Faculty of Sciences, University of Porto,
responsible

Graduate Level

- [2014/15 – ...]
Predictive Analytics
Post-graduation course Business Intelligence and Analytics, PBS - University of Porto Business School, *responsible*
- [2014/15 – 2019/2020]
Data Mining in R
Master of Science in Business Analytics, Stern Business School, University of New York, *responsible*
- [2014/15 – 2017/18]
Fraud Detection
Master's on Information Security, Faculty of Sciences, University of Porto, *responsible*
- [2011/12 – 2017/18]
Data Mining I
Master's on Computer Science, Faculty of Sciences, University of Porto, *responsible*
- [2010/11 – 2012/13]
Prediction Models
Post-graduation course Information Management and Marketing Intelligence, PBS - University of Porto Business School, *responsible*
- [2009/10 – 2017/18]
Knowledge Discovery from Databases
PhD program on Informatics (MAP-I), Universities of Aveiro, Braga and Porto, *member of the team*
(slides of my part of the classes)
- [2008/09 – 2009/10]
Analytical Methods of Fraud Detection
Post-graduation course on Fraud Management, PBS - University of Porto Business School, *responsible*
- [2007/08 – 2008/09]
Advanced Topics in Data Mining and Logic Programming
PhD program on Informatics (MAP-I), Universities of Aveiro, Braga and Porto, *member of the team*
- [2006/07]
Databases

PhD program on Computacional Biology, Institute Gulbenkian of Science, *responsible*

- [2004/05 – 2008/09]
Time Series Analysis
Masters on New Media and E-science, Josef Stefan International Postgraduate School, Ljubljana, Slovenia, *responsible*
- [2004/05 – 2006/07]
Web Mining
Masters on Artificial Intelligence and Intelligent Systems, Faculties of Economics and Engineering, University of Porto, *responsible*
- [2004/05 – 2006/07]
Databases and Programming
Masters on Artificial Intelligence and Intelligent Systems, Faculties of Economics and Engineering, University of Porto, *responsible*
- [2004/05 – 2006/07]
Data Mining I
Masters on Artificial Intelligence and Intelligent Systems, Faculties of Economics and Engineering, University of Porto, *member of the team*
- [2002/03 – 2004/05]
Web Mining
Masters on Artificial Intelligence, Faculties of Sciences, Economics and Engineering, University of Porto, *responsible*
- [2000/01 – 2008/09]
Data Mining I
Masters on Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto, *member of the team*
- [2000/01 – 2008/09]
Databases and Programming
Masters on Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto, *responsible*
- [2000/01 – 2008/09]
Artificial Intelligence Methodologies
Masters on Artificial Intelligence, Faculties of Sciences, Economics and Engineering, University of Porto, *responsible*

3.2 Tutorials

- [2020]
[Learning with Imbalanced Domains and Rare Event Detection, open challenges](#)
[Learning with Imbalanced Domains and Rare Event Detection](#) Co-located with ECML/PKDD 2020

- [2018]
Learning with Imbalanced Domains, a tutorial
2nd International Workshop on Learning with Imbalanced Domains: Theory and Applications Co-located with ECML/PKDD 2018
- [2006]
Using R for Data Mining and Scientific Discovery
9th International Conference on Discovery Science (DS-2006), Barcelona, Spain

3.3 Short Courses

- [May 2021] **Data Science using R**
3 hours [online course](#) at the [Acadia University](#), NS, Canada
- [Jan 2020] **Spatio-Temporal Data Mining**
1 day [course](#) together with [Stan Matwin](#) at the [ACM SIGIR/SIGKDD Africa Summer School on Machine Learning for Data Mining and Search, AFIRM 2020](#), Cape Town, South Africa
- [Jul 2019] **Advanced Predictive Analytics using R**
1 day [course](#) at [LTPlabs](#), Porto, Portugal
- [Apr 2018, Mar 2019] **Predictive Analytics using R**
2 days [course](#) at [Universitat Politècnica de València](#), Valencia, Spain
- [Jan 2018]
Data Mining using R
4 days [course](#) at [Jozef Stefan Institute](#), Ljubljana, Slovenia.
- [Sep 2017]
Data Science in Practice
5 hours [course](#), IIMT Executive Programs, at [International Institute of Management in Technology, University of Fribourg](#), Switzerland
- [May 2017]
Data Mining with R
2 days [course \(in Portuguese\)](#) at [Universidade Federal Fluminense](#), Niterói Rio de Janeiro, Brazil.
- [Jan 2017]
Temporal and Spatio-Temporal Data Mining using R
4 days [course](#) at [Jozef Stefan Institute](#), Ljubljana, Slovenia.
- [Aug 2014 and Jul 2015]
Data Mining in R - learning with case studies
6 days [course](#) at [Istanbul Quantitative Lectures](#), University of Istanbul, Turkey.
- [Feb 2014 and Aug 2014]
Data Mining in R - learning with case studies

- 3 days course at [Institute for Big Data Analytics, Dalhousie University](#), Canada.
- [2013]
Text Mining (co-teacher together with Nitin Indurkha)
regular 4 weeks web course at [statistics.com](#)
 - [Mar 2013 and April 2014]
Data Mining in R - learning with case studies
3 days course at [DIKW Academy](#)
 - [Nov 2012 and Feb 2014]
Data Mining for Fraud Detection using R
7h course at [Actuarial Seguros](#), Lisbon, Portugal.
 - [2011 – 2015]
Data Mining in R - learning with case studies
regular bi-annual 4 weeks web course at [statistics.com](#)
 - [2011 – 2012]
Short introduction to Data Mining
3h short course at [Instituto Superior Técnico](#), Lisboa, Portugal
 - [2011]
Data Mining using R
12h course at Summer School, [Instituto de Ciências Matemáticas e Computação](#), University of São Paulo, São Carlos, Brazil
 - [2010]
Data Mining with R: a short course
10h course at [Dipartimento di Informatica](#), Università degli Studi di Bari, Bari, Italy
 - [2007]
An introduction to the R environment
30h course at [Caixa Economica Federal](#), Brasilia, Brazil
 - [2007]
An Introduction to R
5h course at [University of Beira Interior](#), Covilha, Portugal
 - [2005]
Data Mining with R
6h course at [ACAI Summer School on Knowledge Discovery](#) , 561 views on Dez/2016
 - [2004]
An Autonomous Trading System
International Summer School on Data Analysis, Lisbon, Portugal
 - [2003]
Time Series Analysis

- International Summer School on Neural Networks (NN'03), Porto, Portugal
- [2002]
Financial Applications
International Summer School on Neural Networks (NN'02), Porto, Portugal
- [2002]
Time Series Analysis
International Summer School on Neural Networks (NN'02), Porto, Portugal
- [1998]
Introduction to Regression Methods useful in Data Mining
International Summer School on Knowledge Discovery and Data Mining: Methods and Applications, Caminha, Portugal
- [1994]
Applications of Propositional Learning Systems: examples and techniques
[Instituto de Ciências Matemáticas e Computação](#), University of Sao Paulo, Brazil
- [1994]
Numerical Classification and Prediction
International Workshop on Artificial Intelligence Techniques, Czech Republic

3.4 Pedagogical Publications

- [2009]
A Linguagem R - programação para a análise de dados
Escolar Editora
- [2006]
Introdução à Programação em R
Document contributed to the [R project](#), freely available [here](#)
- [2006]
Introdução à Programação em R
Document (in Portuguese) supporting the subject Databases and Programming, Master on Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto
- [2006]
Introdução aos Sistemas de Gestão de Bases de Dados
Document (in Portuguese) supporting the subject Databases and Programming, Master on Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto
- [2003]
Programação, Análise de Dados e Sistemas de Apoio à Decisão usando o R

Document (in Portuguese) supporting the subject Informatics and Applied Informatics, degrees in Economics and Management, Faculty of Economics, University of Porto

- [1997]
Windows 95, uma breve introdução
Document (in Portuguese) supporting the subject Informatics, degrees in Economics and Management, Faculty of Economics, University of Porto

4 Research Activities

This section presents my main research activities that may help with understanding the impact of my research. Assessing scientific quality is not an easy task and it is still source of debate among many scholars. One of the key issues on this assessment is typically the publication record and associated bibliometric numbers. However, there are many disciplines where other aspects of research activity can be regarded as significant in terms of the impact on the community, and that is frequently the case of Computer Science, the field where I belong. For instance, developing a software tool that is widely used by the community and allows for further advances may well be more important than many publications and yet it is seldom considered as a criterion as it is not easy to assess without being involved in the concrete field of expertise. In my personal case I have developed many software programs that are widely used by the community, like for instance several R packages that have hundreds of monthly downloads. I have also created and still maintain a free regression data set repository that is used in most papers that test new regression algorithms within the machine learning community. This type of contributions, although relevant and important in my personal opinion, are hardly reflected in any type of research bibliometrics (with the exception of the data set repository whose citations are counted by Google Scholar although not all papers that use these data sets, cite the repository).

In spite of the previously mentioned limitations I have collected some data concerning bibliometric information related with my publications with the goal of helping in assessing the impact of this aspect of my research activities. The inclusion of this information requires some clarifications. Bibliometric data involves two main decisions: (i) whether to use it or not; and (ii) if yes, from which source. The first decision is hard to escape - it is the norm nowadays to evaluate CVs based on these numbers. Unfortunately this process often leads to unwanted bad decisions. There is a growing awareness of the research community that these numbers may be seriously misleading, particularly in some disciplines (like Computer Science) where the publication *culture* is rather different from other disciplines, for instance in the case of international conferences. While in most disciplines works published in conferences are not subject to peer reviewing, that is not the case in CS where international conferences are always peer reviewed and some are far more competitive than most journals. This leads to a clear bias on some of the frequently used bibliometric indices that frequently

disregard conferences. Regarding this issue of the bias and risk of misjudgment of bibliometrics it may be interesting to point out several very interesting recent papers on this topic:

- Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols. *Bibliometrics: The Leiden Manifesto for research metrics*. Nature 520, 429–431 (23 April 2015) [doi:10.1038/520429a](https://doi.org/10.1038/520429a)
- Paula Stephan, Reinhilde Veugelers & Jian Wang. *Reviewers are blinkered by bibliometrics*. Nature 544, 411–412 (27 April 2017) [doi:10.1038/544411a](https://doi.org/10.1038/544411a)
- Rinze Benedictus, Frank Miedema & Mark W. J. Ferguson. *Fewer numbers, better science*. Nature 538, 453–455 (27 October 2016) [doi:10.1038/538453a](https://doi.org/10.1038/538453a)

These and many other works have been trying to raise the awareness of the community for the danger of these bibliometric-based decisions. Still, as this is still the norm I will present some of these numbers with the list of publications given below.

The second decision concerns the source of the bibliometric numbers. I have considered 3 sources: Thomson ISI, Elsevier Scopus and Google Scholar. All of them have potential drawbacks. Still, the decision was to select Google Scholar (GS). This index overcomes some limitations the other indices have, particularly for Computer Science, as it is clearly much more inclusive, although with an increased risk of inflating numbers. A few examples of my personal CV provide illustrations of the problems. My top cited publication is my book *Data Mining with R* published by a major publishing house (CRC Press from Taylor and Francis). For some reason that I cannot explain but most probably related with financial issues between the companies involved, this book is not indexed by Scopus. So, a peer reviewed book by a major publisher is non-existent for this widely used bibliometric index; (ii) one of my recent journal publications is on ACM Computing Surveys, one of the top journals of Computer Science according to the 2017 data from Thomson ISI impact factor. At some point in time (12/Dec/2017), according to Google Scholar (GS) this publication from 2016 had 42 citations. According to Scopus this citation number was 20! If we check the concrete citations which is possible on GS we can observe that 6 of these were self-citations, so we can reduce this to 36, but this is still too far from 20. These and other similar effects lead to divergent values like the fact that my *h*-index according to Scopus is significantly lower than that reported in GS, a very common phenomenon for computer science researchers as mentioned in [^1]. Still, GS is not without problems either. For instance, the same book I've mentioned above has two quite different editions currently, the second being more than 150 pages longer, with the other pages having been significantly revised. In spite of this GS insists in not considering these two books which obviously has an impact on the bibliometrics (I've inserted it manually but citations are not being counted by GS).

[^1] - Judit Bar-Ilan. *Which h-index? — A comparison of WoS, Scopus and Google Scholar*. *Scientometrics*, Volume 74, Issue 2, pp. 257–271.

Summarizing, I have decided to include bibliometric data from Google Scholar, even-though I'm well aware that this is a source of debate but my decision was essentially guided by completeness criteria both in terms of computer science in general and in my particular case. Moreover, in order to try to provide more information on the quality of the peer-reviewed conference papers, I have added the CORE rank of the respective conferences. CORE is a widely used source of information on the computer science conferences reputation. It is used worldwide by many funding agencies and universities where the specificities of the computer science field have been recognised. This austrorlasian association provides a rank for international conferences using a scale from A* till Unranked. Further details on the criteria and meaning of this classification schema can be obtained [here](#).

4.1 Publications

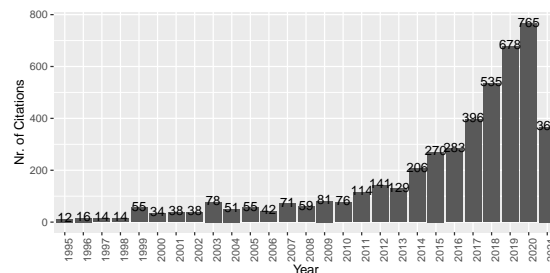
Global bibliometrics

Important Note: All citation numbers were obtained from [my Google Scholar profile](#) on 2021-05-14.

Global scores:

Total Nr. of Citations	h-index	i10-index
4702	29	66

Yearly evolution of the number of citations:



Books

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[1] L. Torgo. *Data Mining with R: Learning with Case Studies, Second Edition (chinese edition)*. China Machine Press (CMP), 2018. ISBN: 9787111596660. ([extra information](#))

[2] L. Torgo. *Data Mining with R: Learning with Case Studies, Second Edition*. Chapman and Hall/CRC, 2017. ([11 citations](#)) ([document](#)) ([extra information](#))

[3] L. Torgo. *Data Mining with R: Learning with Case Studies (Chinese Edition)*. China Machine Press, 2012. ([document](#))

[4] L. Torgo. *Data Mining with R: Learning with Case Studies*. Chapman and Hall/CRC Data Mining and Knowledge Discovery Series. CRC Press, 2010.
([681 citations](#)) ([document](#)) ([extra information](#))

[5] L. Torgo. *A Linguagem R, programação para a análise de dados*. Escolar Editora, 2009.
([document](#))

Edition of Books

[1] A. Jorge, L. Torgo, P. Brazdil, et al., ed. *Knowledge Discovery in Databases: PKDD 2005: 9th European Conference on Principles and Practice of Knowledge Discovery in Databases*. LNAI 3721. Springer, 2005.
([3 citations](#))

[2] J. Gama, R. Camacho, P. Brazdil, et al., ed. *Machine Learning: ECML 2005: 16th European Conference on Machine Learning*. LNAI 3720. Springer, 2005.
([1 citations](#))

Chapters in Books

[1] N. Guimarães, L. Torgo, and A. Figueira. “Twitter as a Source for Time- and Domain-Dependent Sentiment Lexicons”. In: *Social Network Based Big Data Analysis and Applications*. 2018, pp. 1-19.
([3 citations](#)) ([document](#))

[2] L. Torgo. “Regression Trees”. In: *Encyclopedia of Machine Learning and Data Mining*. Ed. by C. Sammut and G. I. Webb. Springer, 2016, pp. 1080-1083.
([document](#))

[3] L. Torgo. “Model Trees”. In: *Encyclopedia of Machine Learning and Data Mining*. Ed. by C. Sammut and G. I. Webb. Springer, 2016, pp. 845-843.
([document](#))

[4] L. Torgo. “Regression Trees”. In: *Encyclopedia of Machine Learning*. Ed. by C. Sammut and G. I. Webb. Springer, 2011, pp. 842-845.
([5 citations](#))

[5] L. Torgo. “Model Trees”. In: *Encyclopedia of Machine Learning*. Ed. by C. Sammut and G. I. Webb. Springer, 2011, pp. 684-686.

[6] L. Torgo and C. Soares. “Resource-bounded Outlier Detection Using Clustering Methods”. In: *Data Mining for Business Applications*. Ed. by C. Soares and R. Ghani. Frontiers in Artificial Intelligence and Applications. IOS Press, 2010, pp. 84-98.
([10 citations](#))

[7] P. Flach, H. Blockeel, T. Gartner, et al. “Data Mining and Decision Support, Integration and Collaboration”. In: *On the road to knowledge: mining 21 years of UK traffic accident reports*. Ed. by D. Mladenic, N. Lavrac, M. Bohanec and

S. Moyle. Morgan Kaufmann, 2003, pp. 143-156.

([14 citations](#))

[8] T. Hellström and L.Torgo. “Post processing trading signals for improved trading performance”. In: *Data Mining III*. WIT Press, 2002, pp. 437-447.

([document](#))

[9] P. Brazdil and L. Torgo. “Knowledge Acquisition via Knowledge Integration”. In: *Current Trends in Knowledge Acquisition*. Ed. by B. e. a. Wielinga. IOS Press, 1990, pp. 90-104.

([87 citations](#)) ([document](#))

Journals

[1] M. Oliveira, L. Torgo, and V. S. Costa. “Evaluation procedures for forecasting with spatiotemporal data”. In: *Mathematics* 9 (6 2021), pp. 691-718.

([11 citations](#)) ([extra information](#))

[2] M. Etemad, A. Soares, E. Etemad, et al. “SWS: an unsupervised trajectory segmentation algorithm based on change detection with interpolation kernels”. In: *GeoInformatica* 25 (2021), pp. 269-289.

([2 citations](#))

[3] V. Cerqueira, L. Torgo, C. Soares, et al. “Model Compression for Dynamic Forecast Combination”. In: *arXiv* arXiv:2104.01830 (2021).

([extra information](#))

[4] V. Cerqueira, L. Torgo, and C. Soares. “Model Selection for Time Series Forecasting: Empirical Analysis of Different Estimators”. In: *arXiv* arXiv:2104.00584 (2021).

([extra information](#))

[5] M. Alam, L. Torgo, and A. Bifet. “A Survey on Spatio-temporal Data Analytics Systems”. In: *arXiv* arXiv:2103.09883 (2021).

([extra information](#))

[6] V. Cerqueira, H. Gomes, A. Bifet, et al. “STUDD: A Student-Teacher Method for Unsupervised Concept Drift Detection”. In: *arXiv* arXiv:2103.00903 (2021).

([extra information](#))

[7] L. T. N Guimarães Á Figueira. “An organized review of key factors for fake news detection”. In: *arXiv* arXiv:2102.13433 (2021).

([extra information](#))

[8] V. Cerqueira, L. Torgo, and I. Mozetic. “Evaluating time series forecasting models: An empirical study on performance estimation methods”. In: *Machine Learning* (2020), pp. 1-32.

([32 citations](#))

[9] M. Monteiro, M. S. Baptista, J. Séneca, et al. “Understanding the Response of Nitrifying Communities to Disturbance in the McMurdo Dry Valleys, Antarctica”.

- In: *Microorganisms* 8.3 (2020). ISSN: 2076-2607. DOI: [10.3390/microorganisms8030404](https://doi.org/10.3390/microorganisms8030404).
(4 citations) (document)
- [10] I. Areosa and L. Torgo. “Visual interpretation of regression error”. In: *Expert Systems* 36.6 (2020). DOI: <https://doi.org/10.1111/exsy.12621>.
(1 citations) (document)
- [11] V. Cerqueira, L. Torgo, and C. Soares. “Early Anomaly Detection in Time Series: A Hierarchical Approach for Predicting Critical Health Episodes”. In: *arXiv arXiv:2010.11595* (2020).
(document)
- [12] V. Cerqueira, L. Torgo, and C. Soares. “Machine Learning vs Statistical Methods for Time Series Forecasting: Size Matters”. In: *arXiv arXiv:1909.13316* (2019).
(19 citations) (document)
- [13] A. G. G. de Sousa, M. P. Tomasino, P. Duarte, et al. “Diversity and Composition of Pelagic Prokaryotic and Protist Communities in a Thin Arctic Sea-Ice Regime”. In: *Microbial ecology ?* (2019), pp. 1-21. DOI: <https://doi.org/10.1007/s00248-018-01314-2>.
(13 citations) (document)
- [14] N. Moniz and L. Torgo. “A review on web content popularity prediction: Issues and open challenges”. In: *Online Social Networks and Media* 12 (2019), pp. 1-20. ISSN: 2468-6964. DOI: <https://doi.org/10.1016/j.osnem.2019.05.002>.
(4 citations) (document)
- [15] A. Figueira, N. Guimaraes, and L. Torgo. “A Brief Overview on the Strategies to Fight Back the Spread of False Information”. In: *Journal of Web Engineering* 18.4 (2019), pp. 319-352. DOI: <https://doi.org/10.13052/jwe1540-9589.18463>.
(1 citations) (document)
- [16] V. Cerqueira, L. Torgo, F. Pinto, et al. “Arbitrage of Forecasting Experts”. In: *Machine Learning* 108 (2019), pp. 913-944.
(15 citations) (document)
- [17] P. Branco, L. Torgo, and R. P. Ribeiro. “Pre-processing approaches for imbalanced distributions in regression”. In: *Neurocomputing* 343 (2019), pp. 76-99. DOI: [10.1016/j.neucom.2018.11.100](https://doi.org/10.1016/j.neucom.2018.11.100).
(8 citations) (document)
- [18] P. Branco, L. Torgo, and R. P. Ribeiro. “REBAGG: REsampled BAGGing for Imbalanced Regression”. In: *Proceedings of Machine Learning Research (PMLR)* 94 (2018), pp. 1-15.
(7 citations) (extra information)
- [19] L. Torgo, S. Matwin, G. Weiss, et al. “Cost-Sensitive Learning: Preface”. In: *Proceedings of Machine Learning Research (PMLR)* 88 (2018), pp. 1-3.
(document)

- [20] P. Branco, L. Torgo, and R. P. Ribeiro. “Resampling with neighbourhood bias on imbalanced domains”. In: *Expert Systems* 35.4 (2018). DOI: [10.1111/exsy.12311](https://doi.org/10.1111/exsy.12311).
(3 citations) (document)
- [21] I. Mozetic, L. Torgo, V. Cerqueira, et al. “How to evaluate sentiment classifiers for Twitter time-ordered data?” In: *PLOS ONE* 13.3 (2018), p. e0194317.
(20 citations) (document) (extra information)
- [22] N. Moniz and L. Torgo. “Multi-Source Social Feedback of Online News Feeds”. In: *arXiv* arXiv:1801.07055 (2018).
(20 citations) (document)
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CORE rank: A

(35 citations) (document)

[74] L. Torgo and J. Gama. “Regression by Classification”. In: *Advances In Artificial Intelligence, Proceedings of the 13th Brazilian Symposium on Artificial Intelligence (SBIA 1996)*. Ed. by D. L. Borges and C. A. A. Kaestner. Vol. 1159. Lecture Notes in Artificial Intelligence. Springer, Oct. 1996, pp. 51-60.

CORE rank: None

(62 citations) (document)

[75] L. Torgo. “Applying Propositional Learning to Time Series Prediction”. In: *Workshop on Statistics, Machine Learning and Knowledge Discovery in Databases*. Ed. by Y. et all Kodratoff. 1995.

CORE rank: None

(5 citations) ([document](#))

[76] L. Torgo. “Data Fitting with Rule-based Regression”. In: *Proceedings of the 2nd International Workshop on Artificial Intelligence Techniques (AIT 1995)*. Ed. by J. Zizka and P. Brazdil. 1995.

CORE rank: None

(26 citations) ([document](#))

[77] L. Torgo. “Controlled Redundancy in incremental Rule Learning”. In: *European Conference on Machine Learning (ECML’93)*. Ed. by P. Brazdil. LNAI 667. Springer-Verlag, 1993, pp. 185-195.

CORE rank: A

(53 citations) ([document](#))

[78] L. Torgo. “Rule Combination in Inductive Learning”. In: *European Conference on Machine Learning (ECML’93)*. Ed. by P. Brazdil. LNAI 667. Springer-Verlag, 1993, pp. 384-389.

CORE rank: A

(16 citations) ([document](#))

[79] P. Brazdil, M. Gams, S. Sian, et al. “Learning in Distributed Systems and Multi-Agent Environments”. In: *Machine Learning: EWSL-91 (European Working Session on Learning)*. Ed. by Y. Kodratoff. Vol. 482. Lecture Notes in Artificial Intelligence. Springer, 1991, pp. 412-423.

CORE rank: None

(72 citations) ([document](#))

[80] L. Torgo and M. Kubat. “Knowledge Integration and Forgetting”. In: *Proceedings of the Czechoslovak Conference on Artificial Intelligence*. 1991.

CORE rank: None

(4 citations) ([document](#))

Other Publications

[1] L. Torgo. “Uma Breve Introdução à Data Science (in portuguese)”. In: *Boletim da APDIO* 57 (2017), pp. 9-11.

([document](#))

[2] C. Magalhães, A. Mucha, F. Carvalho, et al. “Development of an autonomous system for integrated marine monitoring”. In: *Proceedings of 41st CIESM Congress*. 2016.

([document](#))

[3] C. Magalhães, J. Séneca, C. Leite, et al. “Distribution and Environmental Controls on Marine Nitrogen Biogeochemical Functions”. In: *Proceedings of 41st CIESM Congress*. 2016.

([document](#))

- [4] C. Magalhães, C. Lee, M. Monteiro, et al. “Everything is not everywhere: Antarctica Dry Valleys as an extreme counter example”. In: *Proceedings of XXXIV SCAR*. 2016.
- [5] J. Séneca, C. Magalhães, M. Monteiro, et al. “Distribution of prokaryotic communities and NifH gene diversity in the extrem Darwin Mountains, Antarctica”. In: *Proceedings of XXXIV SCAR*. 2016.
- [6] M. Monteiro, J. Séneca, L. Torgo, et al. “The impact of environmental changes on nitrifying communities from the Dry Valleys of Antarctica”. In: *Proceedings of XXXIV SCAR*. 2016.
- [7] C. Bartilotti, A. Santos, R. Marques, et al. “Presenting the MarinEye project – Development and validation of a prototype for multitrophic oceanic monitoring”. In: *Proceedings of ASC 2016- ICES Annual Science Meeting*. 2016.
- [8] C. Magalhães, A. Mucha, F. Carvalho, et al. “Development of an autonomous system for integrated marine monitoring”. In: *Proceedings of XIX Iberian Symposium on Marine Biology Studies*. 2016.
([document](#))
- [9] J. N. van Rijn, V. Umaashankar, S. Fischer, et al. “A RapidMiner extension for Open Machine Learning”. In: *RapidMiner Community Meeting and Conference, 2013*. 2013.
([8 citations](#))
- [10] L. Torgo. “Inductive Learning of Tree-based Regression Models”. PhD thesis. Faculty of Sciences, University of Porto, 1999.

4.2 Projects

Project Coordination

- [2020 – 2025]
Anomaly Detection for Trajectory Data
NSERC Discovery grants, Principal investigator (PI)
Budget: 175 kCad
- [2019 – 2026]
Spatiotemporal Ocean Data Analytics
Tier 1 Canada Research Chair, Principal investigator (PI)
Budget: 1.4 MCad
- [2018 – 2021]
Nitrolimit - Life at the Edge: Define the Boundaries of the Nitrogen Cycle in the Extreme Antarctic Environments
Portuguese Science Foundation (FCT), 02/SAICT/2017, Co-Principal investigator (PI) (PI: Catarina Magalhaes)
Budget: 238.5 kEur

- [2018 – 2019]
Online Observatory of Economic Activity through Digital Means
Private funding: [ASAE, Ministry of Economy, Portugal](#) - Principal investigator (PI)
Budget: 68 kEur
- [2015 – 2018]
Parfois Product/Shop Sales Forecasting for Supporting Logistics Decisions
Private funding: [Parfois](#) - Principal investigator (PI)
Budget: 100 kEur
- [2015 – 2016]
News Summarizer
Private funding: [SkimIT](#) - Principal investigator (PI)
Budget: 35 kEur
- [2011 – 2014]
[e-Policy, Engineering the POLicy-making Life CYcle](#)
EC 7th Framework Programme Theme ICT-2011-7 (EC), Pr. Nr. 288147 -
Local coordinator (PI of Portuguese Partner)
Budget (local partner): 295 kEur; Global budget: 3 MEur
- [2008 – 2011]
[MORWAQ, Monitoring and Predicting Water Quality Parameters](#)
Portuguese Science Foundation (FCT), PTDC/EIA/68489/2006 - Principal investigator (PI)
Budget: 47 kEur
- [2008 – 2011]
[oRANKI, Resource-bounded Outlier Detection](#)
Portuguese Science Foundation (FCT), PTDC/EIA/68322/2006 - Principal investigator (PI)
Budget: 48,5 kEur
- [2008]
Exploratory Analysis of *Sonae Distribuição* Employees Survey (2008)
MBA Consultores, private funding - Principal investigator (PI)
- [2007 – 2008]
Monitoring water quality parameters
Águas do Douro e Paiva, SA, private funding - Principal investigator (PI)
- [2004–2006]
[MODAL, Models for Predicting Algae Blooms in River Douro](#)
Portuguese Science Foundation (FCT), POSI/2000/SRI/40949 - Principal investigator (PI)
Budget: 33 kEur

- [2005]
Exploratory Analysis of *Sonae Distribuição* Employees Survey (2005)
MBA Consultores, private funding - Principal investigator (PI)
- [2003 – 2004]
Development of a System for Automatic Intraday Trading in Stock Markets
private funding - Principal investigator (PI)

Project Participation

- [2021–2024]
CONNECT2OCEANS - Connecting Atlantic and Arctic Oceans to Decipher Climate Change Impact on Plankton Microbiome Functions
FCT, Portugal
Global budget: 240kEur
- [2016–2018]
CORAL - Sustainable Ocean Exploitation: Tools and Sensors
FEDER, Portugal 2020, Norte 2020 - Leader of the data analysis team
Global budget: 2.3 MEur
- [2015–2017]
MarinEye - a prototype for multitrophic ocean monitoring
EEA Grants, [project PT02-0037](#) - leader of the workpackage on data analysis
Global budget: 373 kEur
- [2016–2018]
Reminds - Relevance Mining and Detection System
Portuguese Science Foundation - UT Austin/Portugal Program
Global budget: 187 kEur
- [2015–2018]
FOTOCATGRAF - Graphene-based semiconductor photocatalysis for a safe and sustainable water supply: advanced technology for emerging pollutants removal
Portuguese Science Foundation - UT Austin/Portugal Program - 2014, [project 137424](#) - leader of the data analysis team
Global budget: 200 kEur
- [2014–2015]
OpenML
EC Harvest Pascal Network
- [2011 – 2012]
PRODUTECH-PSI, New Products and Services for the Trans-

formation Industry

Compete - Portugal 2020
Global budget: 12.5 MEur

- [2008 – 2011]
Rank!, Development of methods for predicting item scheduling
Portuguese Science Foundation (FCT), PTDC/EIA/81178/2006
- [2000 – 2005]
Sol-Eu-Net
European Community (EC), IST-1999-11495
Global budget: 3 MEur
- [2000 – 2001]
Tsam, Knowledge extraction from financial time series for risk management
Portuguese Science Foundation (FCT), POSI/SRI/34329/99
- [1998 – 2002]
METAL, A Meta-Learning Assistant for Providing User Support in Machine Learning and Data Mining
European Community (EC), ESPRIT 26.357
- [1997 – 2000]
ECO, Knowledge Extraction from Databases
Portuguese Science Foundation (FCT), Praxis XXI
- [1991 – 1994]
Statlog
European Community (EC), Esprit Project 5170
- [1989 – 1992]
ECOLES
European Community (EC), Esprit II 3059

4.3 Prizes

- [2017]
Co-author (author was Vitor Cerqueira) of the paper that won the *Best Student Machine Learning Paper Award* given by the Machine Learning Journal at the European Conference on Machine Learning (ECML/PKDD'2017)
- [2017]
Supervisor of the PhD thesis of Nuno Moniz entitled “Prediction and Ranking of Highly Popular Web Content” that was awarded the 2nd place in the [Fraunhofer Portugal Challenge 2017](#) competition in the category of PhD theses
- [2006]
Co-author (author was Rita Ribeiro) of the paper that won the *Best*

Student Paper Award given by Yahoo! Research Labs at the Discovery Science (DS'06) international conference

- [1999]
Runner-up winner at the 3rd International Competition “Protecting rivers and streams by monitoring chemical concentrations and algae communities”, organized by ERUDIT in conjunction with COIL, the cluster of four European Research Networks (ERUDIT, EvoNet, MLNet and NeuroNet)

4.4 Supervision

Post-Doctoral Fellows

Ongoing

- Vitor Cerqueira
 - Title: Mining Time-dependent Data
 - Start: 2020

Finished

- [Paula Branco](#)
 - Title: Utility-based Predictive Analytics
 - 2019
 - Current position: Assistant Professor at University of Ottawa, Canada
- [Colin Bellinger](#)
 - Title: Methods for Handling Adverse Data Properties
 - 2018
 - Current position: Research Officer at National Research Council (NRC), Canada

Ph.D.'s

Ongoing

- Marvin da Silva
 - Title: TBD
 - Supervisor: Luis Torgo ; co-supervisor: Sageev Oore (Dalhousie University, Canada)
 - PhD on Computer Science, Dalhousie University, Canada
 - Start: 2021
- Francisco Pascoal
 - Title: Deciphering the roles of the prokaryotic rare biosphere in the Arctic Ocean under climate change
 - Supervisor: Catarina Magalhaes (University of Porto, Portugal); co-supervisors: Luis Torgo and Rodrigo Costa (IST, Portugal)
 - PhD on Biology, Faculty of Sciences, University of Porto, Portugal
 - Start: 2021
- Md Mahbub Alam

- Title: Spatiotemporal data analysis with big data
- Supervisor: Luis Torgo
- PhD on Computer Science, Faculty of Computer Science, Dalhousie University
- Start: 2020
- Luis Roque
 - Title: Deep Probabilistic Models in Hierarchical Time Series
 - Supervisor: Luis Torgo; co-supervisor: Carlos Soares
 - PhD Program Faculty of Engineering/UPorto
 - Start: 2020
- Mariana Oliveira
 - Title: Predictive Analytics for Dependent Data
 - Supervisor: Luis Torgo; Co-Supervisor: Vitor Santos Costa
 - MAPi PhD Program, Universities of Aveiro, Minho and Porto
 - Start: 2017
- Nuno Guimarães
 - Title: Analyzing and Developing Veracity Indicators for Building an Automatic Detector of False Online News
 - Supervisor: Álvaro Figueira; co-supervisor: Luis Torgo
 - PhD on Computer Science, Faculty of Sciences, University of Porto
 - Start: 2017

Finished

- Mohammad Etemad
 - Title: Segmentation Algorithms for Trajectory Data
 - Supervisor: Stan Matwin; co-supervisor: Luis Torgo
 - PhD on Computer Science, Faculty of Computer Science, Dalhousie University
 - October/2020
- [Vitor Cerqueira](#)
 - Title: [Ensembles for Time Series Forecasting](#)
 - Supervisor: Luis Torgo; Co-Supervisor: Carlos Soares
 - PhD Program Faculty of Engineering/UPorto
 - December/2019
 - Current position: Post Doctoral Fellow at Dalhousie University, Canada
- [Paula Branco](#)
 - Title: [Utility-based Predictive Analytics](#)
 - Supervisor: Luis Torgo; Co-Supervisor: Rita Ribeiro
 - MAPi PhD Program, Universities of Aveiro, Minho and Porto
 - September/2018
 - Current position: Assistant Professor at University of Ottawa, Canada
- [Nuno Moniz](#)
 - Title: [Prediction and Ranking of Highly Popular Web Content](#)
 - Supervisor: Luis Torgo
 - PhD on Computer Science, Faculty of Sciences, University of Porto

- July/2017
- Awarded the 2nd place in the Fraunhofer Portugal Challenge
- Current position: Post Doctoral Fellow at the Laboratory of Artificial Intelligence and Decision Support (LIAAD - INESC Tec), and an Invited Professor at the Faculty of Sciences of the University of Porto, Portugal
- Brett Drury
 - Title: [A Text Mining System for Evaluating the Stock Market's Response To News](#)
 - Supervisor: Luis Torgo; Co-Supervisor: José João Almeida (Univ. Minho)
 - MAPi PhD Program, Universities of Aveiro, Minho and Porto
 - April/2013
 - Current position: Full-Stack Senior Data Scientist at Deeper Insights, Portugal
- Orlando Ohashi
 - Title: [Spatio-Temporal Prediction Methods](#)
 - Supervisor: Luis Torgo
 - MAPi PhD Program, Universities of Aveiro, Minho and Porto
 - December/2012
 - Current position: Adjunct Professor at UFRA, Brazil
- [Rita Ribeiro](#)
 - Title: [Utility-based Regression](#)
 - Supervisor: Luis Torgo
 - PhD on Computer Science, Faculty of Sciences, University of Porto
 - September/2011
 - Current position: Assistant Professor at the Department of Computer Science of the Faculty of Sciences of the University of Porto, Portugal
- Pedro Almeida
 - Title: [Previsão do Comportamento de Séries Temporais Financeiras com Apoio de Conhecimento Sobre o Domínio](#)
 - Supervisor: Luis Torgo
 - Doutoramento em Engenharia Informática, Universidade da Beira Interior
 - April/2003
 - Current position: Assistant Professor at Beira Interior University, Portugal

M.Sc.'s

Ongoing

- Vishnu Kandimalla
 - Title: [Integrating Multiple Deep Learning Models to Track and Classify at Risk-Fish Species](#)
 - Supervisor: Luis Torgo ; co-supervisor: Cristopher Widen

- MSc on Computer Science, Faculty of Computer Science, Dalhousie University
- Start: 2020
- Amruth Kuppili
 - Title: Forecasting meteorological variables and anticipating climatic aberrations of an oceanic Buoy using a neighbour buoy
 - Supervisor: Luis Torgo
 - MSc on Computer Science, Faculty of Computer Science, Dalhousie University
 - Start: 2020

Finished

- Deepan Shankar
 - Title: Forecasting Algae Blooms using Data from Mussels' Openings
 - Supervisor: Luis Torgo
 - MSc on Computer Science, Faculty of Computer Science, Dalhousie University
 - Apr/2021
- Inês Areosa
 - Title: [Visual Tools for Understanding Regression Performance](#)
 - Supervisor: Catarina Magalhães; Co-Supervisors: Pedro Duarte and Luis Torgo
 - Master of Science Degree in Aerospace Engineering, IST, Portugal
 - Nov/2019
 - Current position: Research and Data Analyst Specialist at GVC Italia, Lebanon
- Antonio Gaspar Goncalves de Sousa
 - Title: [Arctic microbiome and N-functions during the winter-spring transition](#)
 - Supervisor: Catarina Magalhães; Co-Supervisors: Pedro Duarte and Luis Torgo
 - Masters on Molecular and Celular Biology, ICBAS, University of Porto
 - Nov/2017
 - Current position: Bioinformatician at Instituto Gulbenkian de Ciência, Portugal
- Carlos Leite
 - Title: [Domain Oriented Biclustering Validation](#)
 - Supervisor: Luis Torgo; Co-Supervisor: Catarina Magalhães
 - Masters on Computer Science, Faculty of Sciences, University of Porto
 - 30/Nov/2016
 - Grade: 19 out of 20
 - Current position: Data Scientist at Facebook, England
- Nuno Guimarães
 - Title: [Lexicon Expansion System for Domain and Time Oriented Sentiment Analysis](#)

- Supervisor: Luis Torgo; Co-Supervisor: Álvaro Figueira
- Masters on Computer Science, Faculty of Sciences, University of Porto
- 28/Nov/2016
- Grade: 18 out of 20
- Current position: PhD student at University of Porto
- Mariana Oliveira
 - Title: [Propositional and Relational Approaches to Spatio-Temporal Data Analysis](#)
 - Supervisor: Luis Torgo; Co-Supervisor: Vitor Santos Costa
 - Masters on Computer Science, Faculty of Sciences, University of Porto
 - October/2015
 - Grade: 20 out of 20
 - Current position: PhD student at University of Porto
- Luís Baía
 - Title: [Actionable Forecasting and Activity Monitoring: applications to financial trading](#)
 - Supervisor: Luis Torgo
 - Masters in Engineering Mathematics, Faculty of Sciences, University of Porto
 - August/2015
 - Grade: 20 out of 20
 - Current position: Senior Data Scientist at Hostelworld Group, Portugal
- Paula Branco
 - Title: [Re-sampling Approaches for Regression Tasks under Imbalanced Domains](#)
 - Supervisor: Luis Torgo; Co-supervisor: Rita Ribeiro
 - Masters in Computer Science, Faculty of Sciences, University of Porto
 - September/2014
 - Grade: 19 out of 20
 - Current position: Assistant Professor at University of Ottawa, Canada
- Fernando Correia
 - Title: [SunPet – Real-time Sun Exposure Monitorization using Smartphones](#)
 - Supervisor: Luís Rosado (Fraunhofer AICOS); Co-Supervisor: Luis Torgo
 - Masters in Network and Information Systems Engineering, Faculty of Sciences, University of Porto
 - 2014
- João Cepêda
 - Title: [Telecommunication Fraud Detection Using Data Mining techniques](#)
 - Supervisor: Carlos Soares (FEUP/UPorto); Co-Supervisor: Luis Torgo
 - Master in Electrical and Computers Engineering, Faculty of Engineering, University of Porto

- June/2014
- Pedro Coelho
 - Title: [Multi-Topic Sentiment Analysis](#)
 - Supervisor: Luis Torgo
 - Masters in Computer Science, Faculty of Sciences, University of Porto
 - 2013
- Hélia Costa
 - Title: [Estudo comparativo de abordagens ao problema de débito de transações bancárias em contas com saldo insuficiente](#)
 - Supervisor: Luis Torgo
 - Masters in Engineering Mathematics, Faculty of Sciences, University of Porto
 - September/2012
- Raquel Santos
 - Title: Modelos de Regressão para a Previsão de Vendas e de Clientes
 - Supervisor: Luis Torgo; Co-Supervisor: Luis Marques (SONAE)
 - Masters in Engineering Mathematics, Faculty of Sciences, University of Porto
 - 2010
- Pedro Duarte
 - Title: Service-Oriented Architectures
 - Supervisor: Paulo Martins (Critical); Co-Supervisor: Luis Torgo
 - Masters in Network and Information Systems Engineering, Faculty of Sciences, University of Porto
 - 2010
- Clara Gonçalves
 - Title: Modelos de Regressão com Análise Classificatória
 - Supervisor: Joaquim Pinto da Costa ; Co-Supervisor: Luis Torgo
 - Masters in Engineering Mathematics, Faculty of Sciences, University of Porto
 - 2005
- Jorge Barbosa
 - Title: Métodos para lidar com Mudanças de Regime em Séries Temporais Financeiras
 - Supervisor: Luis Torgo
 - Master in Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto
 - 2005
- Joana Marques
 - Title: Um estudo sobre a eficiência computacional da construção de árvores de regressão
 - Supervisor: Luis Torgo
 - Masters in Artificial Intelligence and Computation, Faculty of Economics, University of Porto
 - 2004
- Rita Ribeiro

- Title: Modelos de Previsão de Fenómenos Raros
- Supervisor: Luis Torgo
- Masters in Artificial Intelligence and Computation, Faculty of Economics, University of Porto
- 2003
- Ana Silva
 - Title: [Extracção da Informação de Tabelas Contidas em Texto - uma aplicação a Relatórios de Contas em Empresas Portuguesas](#)
 - Supervisor: Alipio Jorge; Co-supervisor: Luis Torgo
 - Master in Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto
 - 2002
- Mário Oldemiro
 - Title: Técnicas de Inteligência Artificial Aplicadas à Previsão de Séries Temporais Financeiras
 - Supervisor: Luis Torgo; Co-supervisor: Pavel Brazdil
 - Master in Data Analysis and Decision Support Systems, Faculty of Economics, University of Porto
 - 2002
- César Rocha
 - Title: [Algoritmo Recursivo dos Mínimos Quadrados para Regressão Linear Local](#)
 - Supervisor: Luis Torgo
 - Masters in Statistics, Faculty of Sciences, University of Porto
 - 2001
- Sílvia Amorim
 - Title: [A escolha do número de classes no método de classificação das k-Médias](#)
 - Supervisor: Joaquim Pinto da Costa; Co-supervisor: Luis Torgo
 - Masters in Statistics, Faculty of Sciences, University of Porto
 - 2001

4.5 Organization of Events

- [2021]
[24th International Conference on Discovery Science](#), co-PC chair
- [2021]
[3rd International Workshop on Learning with Imbalanced Domains: Theory and Applications](#), European Conference on Machine Learning, ECML'2021, co-organizer
- [2020]
[Learning with Imbalanced Domains and Rare Event Detection](#), European Conference on Machine Learning, ECML'2018, co-organizer of a half-day tutorial

- [2018]
2nd International Workshop on Learning with Imbalanced Domains: Theory and Applications, European Conference on Machine Learning, ECML'2018, workshop co-chair
- [2018]
International Workshop on Cost Sensitive Learning, to take place at SIAM International Conference on Data Mining, San Diego, USA, 3-5 May 2018, workshop co-chair
- [2017]
1st International Workshop on Learning with Imbalanced Domains: Theory and Applications, European Conference on Machine Learning, ECML'2017, workshop co-chair
- [2015]
25th European Conference on Machine Learning, ECML'2015, workshop chair
- [2008]
18th COMPSTAT Symposium of the IASC-ERS, COMPSTAT'08, local organizing committee member
- [2005]
9th European Conference on Principles and Practice of Knowledge Discovery, PKDD'2005, program co-chair, local organization committee member and webmaster
- [2005]
16th European Conference on Machine Learning, ECML'2005, local organization committee member and webmaster
- [2003]
14th European Conference on Machine Learning, ECML'2003, workshop chair
- [2003]
7th European Conference on Principles and Practice of Knowledge Discovery, PKDD'2003
- [2003]
International Workshop on Data Mining and Adaptive Modelling Methods for Economics and Management, local organization committee member
- [2001]
Workshop on Artificial Intelligence for Financial Time Series Analysis, program Chair, local organization committee member, and webmaster

4.6 Scientific Reviewing

Academic Juris

- [2021]
MSc. Thesis of Fatemeh Rahimi - *MTLV: A Library for building deep multi-task learning architectures*, Masters of Computer Science, Faculty of Computer Science, Dalhousie University, Canada
- [2021]
PhD Thesis of Xiang Jiang - *Learning Adaptive Deep Representations for Few-to-Medium Shot Image Classification*, PhD of Computer Science, Faculty of Computer Science, Dalhousie University, Canada
- [2020]
MSc. Thesis of Tamir Elmasri - *Prediction Based Web Application for Customer Opinion Product Analysis using Twitter's API*, MEC, Faculty of Computer Science, Dalhousie University, Canada
- [2020]
MSc. Thesis of Olashile S. Adebimpe - *Time-series forecasting using feature based hybrid approach*, Masters of Computer Science, Faculty of Computer Science, Dalhousie University, Canada
- [2017]
Ph.D. Thesis of Pedro Saleiro - *Entity-Specific Text Mining for Online Reputation Monitoring*, University of Porto, Portugal
- [2017]
Ph.D. Thesis of Davi D'Andréa Baccan - *Contributions of Computational Cognitive Modeling to the Understanding of the Financial Markets*, University of Coimbra, Portugal
- [2015]
Ph.D. Thesis of Vinay Uday Prabhu - *Network Aided Classification and Detection of Data*, Carnegie Mellon University / MAP-I Doctoral Program, Pittsburgh, USA
- [2013]
Ph.D. Thesis of Ricardo Nuno Taborda Campos - *Disambiguating Implicit Temporal Queries for Temporal Information Retrieval Applications*, PhD on Computer Science, Faculty of Sciences, University of Porto, Portugal
- [2012]
Ph.D. Thesis of Nuno Constantino Castro - *Time Series Motif Discovery*, MAP-I Doctoral Program, University of Minho, Portugal
- [2012]
MSc. Thesis of Nuno Moniz - *Bridging the gap between closed and open data, System proposal for the Portuguese Legislation*, Masters on Computer

Engineering, specialization in Networks, Architectures and Systems , ISEP, Portugal

- [2011]
Ph.D. Thesis of Rui Barbosa - *Agents in the Market Place*, University of Minho, Portugal
- [2008]
Ph.D. Thesis of Pedro Rafael de Ruiz Graça - *Aprendizagem Interactiva em Sistemas Multi-Agente*, University of Lisbon, Portugal
- [2008]
Ph.D. Thesis of Anneleen Van Assche - *Improving the Applicability of Ensemble methods in Data Mining*, Katholieke Universiteit Leuven, Belgium
- [2007]
Ph.D. Thesis of Pedro Gabriel Dias Ferreira - *Sequence Pattern Mining in Biochemical Data*, University of Minho, Portugal
- [2005]
Ph.D. Thesis of Kwok Pan Pang - *Statistics for Structural Break Detection and Their Application to Forecasting and Statistical Process Control*, Monash University, Australia
- [2004]
MSc. Thesis of Susana Pereira - *Análise de Séries Temporais no Domínio das Telecomunicações Móveis*, Masters on Statistics and Information Management, ISEGI, New University of Lisbon, Portugal
- [2003]
Ph.D. Thesis of Vitor Lobo - *Ship Noise Classification, a contribution to prototype based classifier design*, New University of Lisbon, Portugal
- [2003]
MSc. Thesis of Raul Moisés - *Modelo Predictivo, Baseado em Redes Neurais, para Previsão em Séries Temporais com Origem em Sistemas Financeiros*, New University of Lisbon, Portugal

Research projects

- [2017]
European Commission, Expert Reviewer (EX2017D300375), Review of 4 proposals for the H2020-MSCA-IF-2017 (Horizon 2020 Marie Skłodowska-Curie Actions - Individual Fellowships)
- [2016]
KU Leuven, Belgium. *Review of one project proposal.*
- [2011 – 2014]
FIRST - Large scale information extraction and integration infrastruc-

ture for supporting financial decision making. EC Seventh Framework Programme, project nr. 257928. *Member of the Advisory Board.*

- [2013]
Czech Science Foundation – GACR. *Review of one project proposal.*
- [2011]
Czech Science Foundation – GACR. *Review of two projects proposals.*
- [2010]
Czech Science Foundation – GACR. *Review of one project proposal.*

Editorial Boards of Journals

- *Data Mining and Knowledge Discovery*, Springer.
Member of the editorial board.
- *Mathematics*, MDPI.
Member of the editorial board.
- *Intelligent Data Analysis*, IOS Press.
Member of the editorial board.

Journals

- *Data Mining and Knowledge Discovery*, Springer.
Reviewing of 17 submissions.
- *Journal of Machine Learning Research*.
Reviewing of 5 submissions.
- *Machine Learning Journal*, Kluwer Academic Publishers.
Reviewing of 17 submissions.
- *IEEE Transactions on Knowledge and Data Engineering*, IEEE Computer Society.
Reviewing of 5 submissions.
- *IEEE Transactions on Pattern Analysis and Machine Intelligence*, IEEE Computer Society.
Reviewing of 1 submission.
- *Journal of Artificial Intelligence Research*, Morgan Kaufmann.
Reviewing of 1 submission.
- *Decision Support Systems*, Elsevier.
Reviewing of 2 submissions.
- *Neural Computing and Applications*, Springer.
Reviewing of 1 submission.
- *Neural Networks*, Elsevier.
Reviewing of 1 submission.

- *Neurocomputing*, Elsevier.
Reviewing of 3 submission.
- *Intelligent Data Analysis*, Elsevier Science.
Reviewing of 3 submission.
- *Expert Systems*, Wiley.
Reviewing of 1 submission.
- *International Journal of Human-Computer Studies*, Elsevier Science.
Reviewing of 1 submission.
- *AI Communications*, IOS Press.
Reviewing of 1 submission.
- *International Journal on Artificial Intelligence Tools*, World Scientific.
Reviewing of 2 submission.

International Conferences

- *KDD, ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*
2021 (PC member), 2009 (PC member), 2007 (PC member)
- *ICML, International Conference on Machine Learning*
2021 (PC member), 2020 (PC member), 2016 (PC member), 2011 (PC member), 2010 (PC member), 2009 (Area Chair), 2008 (Area Chair), 2004 (PC member)
- *ECML, European Conference on Machine Learning*
2018 (Area Chair), 2017 (Area Chair), 2016 (PC member), 2015 (Area Chair), 2014 (PC member), 2013 (PC member), 2012 (Area Chair), 2011 (Area Chair), 2010 (PC member), 2009 (PC member), 2008 (PC member), 2007 (Area Chair), 2006 (Area Chair), 2005 (Area Chair), 2004 (PC member), 2003 (PC member)
- *ICDM, IEEE International Conference on Data Mining*
2007 (PC member), 2006 (PC member), 2005 (PC member), 2004 (PC member)
- *PKDD, European Conference on Principles and Practice of Knowledge Discovery in Databases*
2018 (Area Chair), 2017 (Area Chair), 2016 (PC member), 2015 (Area Chair), 2014 (PC member), 2013 (PC member), 2012 (Area Chair), 2011 (Area Chair), 2010 (PC member), 2009 (PC member), 2008 (PC member), 2007 (Area Chair), 2006 (Area Chair), 2005 (Program Chair), 2004 (PC member), 2003 (PC member)
- *PAKDD, Pacific-Asia Conference on Knowledge Discovery and Data Mining*
2009 (PC member), 2008 (PC member), 2007 (PC member)

- *DS, International Conference on Discovery Science*
2019 (PC member), 2010 (PC member), 2009 (PC member), 2008 (PC member), 2007 (PC member)
- *AAAI, Conference on Artificial Intelligence*
2018 (PC member), 2017 (PC member), 2015 (PC member), 2014 (PC member)
- *IJCAI, International Joint Conference on Artificial Intelligence*
2021 (Area Chair), 2020 (PC member), 2019 (PC member), 2017 (PC member), 2013 (Senior PC member), 2011 (Senior PC member)
- *ECAI, European Conference on Artificial Intelligence*
2014 (Senior PC member), 2012 (PC member), 2010 (PC member)
- *SDM21, SIAM International Conference on Data Mining*
2021 (PC member)
- *NIPS, Annual Conference on Neural Information Processing Systems*
2014 (PC member)
- *ACML, Asian Conference on Machine Learning*
2012 (PC member)
- *UseR, The R User Conference*
2013 (PC member)
- *SAC, ACM Symposium on Applied Computing*
2005 (PC member)
- *ADMA, International Conference on Advanced Data Mining and Applications*
2008 (PC member), 2007 (PC member), 2006 (PC member), 2005 (PC member)
- *IBERAMIA, Iberoamerican Conference on Artificial Intelligence*
2002 (PC member), 2000 (PC member), 1998 (PC member)
- *EPIA, Portuguese AI Conference*
2005 (PC member), 2003 (PC member), 2001 (PC member)
- *SBIA, Brazilian Symposium on Artificial Intelligence*
2008 (PC member), 2004 (PC member)
- *ENIA, Brazilian Meeting on Artificial Intelligence*
2011 (PC member), 2007 (PC member)

4.7 Software

- [2016]
[DMwR2](#) - an R package with functions and data for the 2nd

edition of “Data Mining with R”

[GitHub project page](#)

- [2016, co-author]
UBL - an R package for utility-based predictive analytics
[GitHub project page](#)
- [2014]
performanceEstimation - an R package for estimating the performance of predictive models
[GitHub project page](#)
- [2010]
DMwR - an R package with functions and data for the 1st edition of “Data Mining with R”
- [2005]
TNT - an autonomous trading system for financial markets
- [2001]
CLRT - Clustered regression models
- [1999]
RT - Tree-based regression models
- [1997]
C library for propositional learning (in conjunction with João Gama)
- [1996]
RECLA - Regression through classification
- [1996]
KERTI - Kernel regression trees
- [1996]
EcoTerme - Calculus of thermic behaviour of buildings
- [1995]
R² - regression rules learner
- [1995]
YAP-Prolog library for propositional learning
- [1993]
YAILS - Incremental learning of classification rules
- [1991]
INTEG - Knowledge integration system

4.8 Visits to Research Labs

- [Jan/2018] One week visit to the Jozef Stefan Institute, Ljubljana, Slovenia.
Host: Prof. Igor Mozetic

- [Jan/2017] One week visit to the Jozef Stefan Institute, Ljubljana, Slovenia. Host: Prof. Igor Mozetic
- [Sep-Dec/2015] Four months visit to the Weka research lab at University of Waikato, New Zealand. Host: Prof. Bernhard Pfahringer.
- [July/2012] Two weeks visit to the Text Analysis and Machine Learning (TAMALE) research lab at University of Ottawa, Canada. Host: Prof. Stan Matwin.
- [May/2012] Two weeks visit to the Weka research lab at University of Waikato, New Zealand. Host: Prof. Bernhard Pfahringer.
- [Jun/2010] One month visit to the Department of Informatics, University degli Studi di Bari, Italy. Host: Prof. Donato Malerba
- [Fev-Jul/2008] Six months visit to the Weka research lab at University of Waikato, New Zealand. Host: Prof. Bernhard Pfahringer.
- [Mar-Aug/2004] Five months visit to the Stern Business School of the University of New York. Hosts: Profs. Foster Provost and Vasant Dhar
- [1994] Three months visit to the University of São Paulo, campus São Carlos, Brazil. Host: Prof. Carolina Monard

4.9 Invited Seminars

- [Mar/2021] *Time Series Forecasting: some challenges and possible solutions*, [DaSSWeb](#), [Data Science and Statistics Webinar](#), Porto, Portugal.
- [Sep/2019] *Adressing the Data Revolution*, [Engineers Nova Scotia Annual Conference](#), Halifax, Canada.
- [Jun/2018] *Predictive Analytics and the Ocean*, [H2O Conference](#), [Oceans Week](#), Halifax, Canada.
- [May/2018] *Utility-based Regression*, [COST'2018](#), San Diego, USA.
- [Jan/2018] *Arbitrage of Forecasting Experts*, Jozef Stefan Institute, Slovenia.
- [July/2017] *Data Pre-processing Methods for Forecasting with Spatio-Temporal Data*, invited talk at the international conference [Data Science, Statistics and Visualization](#), Lisbon, Portugal
- [June/2017] *Handling Imbalanced Regression Tasks through Utility- based Regression*, invited seminar at [Université de Fribourg](#), Fribourg, Switzerland

- [May/2017] *An Infra-Structure for Performance Estimation and Experimental Comparison of Predictive Models in R*, invited talk at [SER](#), Niteroi, Rio de Janeiro, Brazil
- [Jan/2017] *Resampling Approaches for Handling Imbalanced Regression Tasks*, Jozef Stefan Institute, Slovenia.
- [Dec/2015] *An Infra-Structure for Performance Estimation and Experimental Comparison of Predictive Models in R*, University of Waikato, New Zealand
- [Sep/2015] *Feature Engineering for Handling Spatial and Spatio-Temporal Forecasting*, University of Waikato, New Zealand
- [Jun/2015] *The R Language - programming for data analysis*, [Join 2015](#), Braga, Portugal
- [May/2015] *Data Mining aplicado à Previsão de Blooms de Algas*, [Workshop Aquacultura 2015](#), Porto, Portugal
- [May/2015] *Data Science - what, why and how?*, [Porto Tech Hub](#), Porto, Portugal
- [Mar/2015] *An Infra-Structure for Performance Estimation and Experimental Comparison of Predictive Models in R*, Porto R Users Group (PRUG), Porto, Portugal
- [Jan/2015] *An Infra-Structure for Performance Estimation and Experimental Comparison of Predictive Models in R*, LIAAD Seminars, INESC Tec, Portugal
- [Nov/2014] *Monitoring and Forecasting Rare Events*, Workshop INESC/CIIMAR, INESC Tec, Portugal
- [Jun/2014] *Dynamic Documents in R*, DCC talks, FCUP/UPorto, Portugal
- [Jan/2014] *Spatio-temporal data mining and extreme behavior data mining*, LIAAD Open-Day, INESC Tec, Portugal
- [Jul/2013] *Spatial Interpolation using Multiple Regression*, University of Konstanz, Germany
- [Feb/2013] *Data Mining para a Detecção de Fraude*, INESC Tec, Portugal

- [May/2012]
Modeling Deviations from Expected Behavior - two case studies, University of Waikato, New Zealand
- [Out/2011]
Modeling Deviations from Expected Behavior - two case studies, Back2Basics Seminar Series, Faculty of Engineering, University of Porto, Portugal
- [Out/2011]
Modeling Deviations from Expected Behavior - two case studies, Thought Leader Speaker Series, eBay Research Labs, San Jose, USA
- [Jul/2011]
Modelos de Previsão para Sistemas Dinâmicos Complexos, Seminários em Engenharia de Sistemas, University of Minho, Portugal
- [Jun/2010]
Resource-bounded Outlier Detection using Clustering Methods, Department of Informatics, University degli Studi di Bari, Italy.
- [Jan/2009]
Using Data Mining for Resource-aware Fraud Detection, Workshop on Data Mining for the Banking System, Faculty of Economics, University of Porto, Portugal
- [Mar/2008]
Utility-based Regression - recent developments, University of Waikato, New Zealand
- [Jan/2008]
Utility-based Regression - recent developments, Katholieke Universiteit Leuven, Belgium
- [Jan/2007]
Predicting Rare Extreme Values - recent developments, Solomon Seminars, Josef Stefan Institute, Slovenia
- [Jan/2006]
Non-Uniform Cost Surfaces for Predicting Rare Extreme Values, Solomon Seminars, Josef Stefan Institute, Slovenia
- [Jan/2006]
Regression Error Characteristic Surfaces, Solomon Seminars, Josef Stefan Institute, Slovenia
- [Sep/2004]
An autonomous trading system, International Summer School on Data Analysis, Instituto Superior de Gestão, Portugal
- [Jan/2004]
An intraday Autonomous Trading System, Faculty of Economics, University

of Porto, Portugal

- [Nov/2003]
Mining DNA microarray data: techniques and applications, Instituto de Biologia Molecular e Celular, Porto, Portugal
- [Jun/2003]
Models for Predicting Water Quality, Jornadas em Informática (JOIN'03), University of Minho, Portugal
- [Out/2002]
Artificial Intelligence: from fiction to reality, 2 Ciclo de Conferências em Cibercultura, Guarda, Portugal

4.10 Service to the Community

- [since 1996]
[Repository of Regression Data Sets.](#)

5 Management Activities

- [2020 – ...]
Deputy Director of the Institute for Big Data Analytics at the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2020 – ...]
Head of the Research Cluster on Big Data Analytics, Artificial Intelligence and Machine Learning at the [Faculty of Computer Science](#) of the [Dalhousie University](#), Canada
- [2014 – ...]
Founder and CEO of [KNOYDA](#), a company devoted to training and consulting in data science
- [Sep/2013 – Sep/2015]
Director of the Integrated Master's program on Network and Information Systems Engineering, Faculty of Sciences, University of Porto
- [Apr/2010 – Apr/2012]
Director of the Integrated Master's program on Network and Information Systems Engineering, Faculty of Sciences, University of Porto
- [Nov/2010 – Sep/2011]
Member of the commission responsible for creating the Evaluation Regulation of the teaching staff of the Faculty of Sciences of the University of Porto
- [2008–2011]
Member of board of the [Observatory of Economy and Management of Fraud](#)

- [2008]
Founding partner of the [Observatory of Economy and Management of Fraud](#)
- [2008]
Member of the commission responsible for the creation of a new Post-Graduation course at the University of Porto Business School, entitled Fraud Management.
- [2005–2008]
Member of the ECML-PKDD Steering Committee
- [2005–2009]
Webmaster of the Faculty of Economics of the University of Porto,
- [2005 – ...]
Webmaster of the Modelling Dynamic Systems subgroup of interest of LIAAD
- [2001-2005]
Member of the commission responsible for preparing the proposal for a new degree at the Faculty of Economics of the University of Porto on Economics and Management of Information.
- [1999–2004]
Organizer (together with Mário Florido and Luís Paulo Reis) of the [Seminars of LIACC](#)
- [1999–2005]
Member of the Directive Board of the [Portuguese Association of Artificial Intelligence](#) (APPIA)

6 Other

General Public Publications

- [Dec/2017] Invited Article (in Portuguese) on the *Boletim da APDIO*, vol. 57, entitled [Uma Breve Introdução à Data Science](#)
- [Jun/2012]
Article on the *Visão* magazine entitled [Coitadinho do Doente](#) in the section *Silêncio da Fraude*
- [Feb/2012]
Article on the *Visão* magazine entitled [A Fraude das Patentes de Software](#) in the section *Silêncio da Fraude*

Affiliations

- Member of the Association for Computing Machinery (ACM)

- Member of the International Machine Learning Society
- Member of the Portuguese Association of Artificial Intelligence

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