

CURRICULUM VITAE

A. PERSONAL INFORMATION:

1. Name: Oldemar Rodríguez Rojas.
2. Nationality: Costa Rican.
3. Email: `oldemar.rodriguez@ucr.ac.cr`
4. Website: `www.oldemarrodriguez.com`.
5. Field of specialization: Computer Science and Applied Mathematics.

B. EDUCATION:

1. **Postdoctoral Fellowship** in Department of Statistics, Stanford University, California, USA, 2008–2009.
2. **Doctor of the U.F.R. Mathématique de la Décision**, University of Paris IX – Dauphine, France, 2000. Advisor: Edwin DIDAY. Degree officially accredited in the United States of America as a Ph.D. by WES (World Education Services), that country’s official credential evaluation agency.
3. **Diploma of Advanced Studies in Computer Science (D.E.A.)**, University of Paris IX – Dauphine, France, 1998.
4. **Magister Scientae in Computer Science**, Costa Rica Institute of Technology, Cartago, 1994.
5. **Licentiate Degree in Pure Mathematics**, University of Costa Rica, San Pedro, 1991.
6. **Bachelor’s Degree in Pure Mathematics**, University of Costa Rica, San Pedro, 1988.

C. AWARDS AND DISTINCTIONS

1. Gold Medal for Outstanding Inventor of the Year 2004, awarded by WIPO (World Intellectual Property Organization, based in Geneva, Switzerland) for my work “Symbolic Personal Vector to detect frauds in credit cards”.
2. National science award in Costa Rica, i.e. Clodomiro Picado Twight National Science Award 2001.
3. Graduated as a Doctor with the honorary distinction “TRES HONORABLE”, the highest distinction currently awarded in France.
4. Graduated as Magister Scientae in Computer Science with the honorary distinction MAGNA CUM LAUDE.

5. Second-highest overall grade point average in the March 1994 graduating class of the Costa Rica Institute of Technology.
6. **International Full Professor** at the Monterrey Institute of Technology in Mexico.
7. **Full Professor** at the University of Costa Rica.
8. **Full Professor** at the National University.

D. LANGUAGE SKILLS:

1. I read, write, and speak English.
2. I read, write, and speak French.

E. EXPERIENCE:

- Professor and researcher at at the Monterrey Institute of Technology in México since 2019.
- Vice-Rector for Administration at the University of Costa Rica from January 2021 to June 2021.
- President of the University Council of the University of Costa Rica from October 2009 to October 2010.
- Member of the University Council of the University of Costa Rica from October 2008 to October 2011.
- Dean of the Faculty of Sciences at the University of Costa Rica from August 2004 to October 2008.
- Vice-Dean of the Faculty of Sciences at the University of Costa Rica from July 2002 to July 2004.
- Director of the Master's Program in Mathematics at the University of Costa Rica from February 2001 to January 2003.
- Director of CIMPA – Center for Research in Pure and Applied Mathematics, University of Costa Rica, from February 2016 to June 2019.

F. PARTICIPATION IN INTERNATIONAL EVENTS:

1. **Multiple Correspondence Analysis for Symbolic Multi-Valued Variables.** Presented at the Symbolic Data Analysis Workshop, SDA 2018, in Porto, Portugal. <https://sda2018.wixsite.com/ipvc>
2. **Presentation of the RSDA package with case studies.** Short course presented at the Symbolic Data Analysis Workshop, SDA 2018, in Porto, Portugal. <https://sda2018.wixsite.com/ipvc>

3. **Optimized dimensionality reduction methods and symbolic principal component for interval valued variables.** Presented at Data Science: New Data, New Paradigms, Université Paris-Dauphine. <http://vladowiki.fmf.uni-lj.si/lib/execute.php?media=sda:pub:procparis18.pdf>
4. **Optimized symbolic principal components for interval-valued variables.** Presented at SDA 2017, 12–14 June 2017, Ljubljana, Slovenia. <https://iasc-isi.org/downloadIasc/sda2017flyer.pdf>
5. **Best point symbolic principal components for interval-valued variables.** Presented at SIMMAC 2017, CIMPA, University of Costa Rica. <http://www.cimpa.ucr.ac.cr/simmac/es/>
6. **Principal Curves and Surfaces to Interval Valued Variables.** Presented at SDA2015 – Symbolic Data Analysis Conference in Orléans, France. <http://www.univ-orleans.fr/mapmo/colloques/sda2015/>
7. **Short course on my R software package named RSDA.** Presented at CEREMADE (Centre de Recherche en Mathématiques de la Décision) at the University of Paris IX – Dauphine in France, November 11–14, 2015.
8. **Lecture: Shrinkage linear regression for symbolic interval-valued variables.** Presented at CEREMADE (Centre de Recherche en Mathématiques de la Décision) at the University of Paris IX – Dauphine in France, November 11–14, 2015.
9. **A generalization of Centre and Range method for fitting a linear regression model to symbolic interval data using Ridge Regression, Lasso and Elastic Net methods** presented at IFCS, held in Tilburg, the Netherlands, in August 2013.
10. **Latest developments of the RSDA: An R package for Symbolic Data Analysis.** Presented at IFCS, held in Tilburg, the Netherlands, in August 2013.
11. **The Duality Problem in Interval Principal Components Analysis.** Presented at the 3rd Workshop on Symbolic Data Analysis, Madrid, Spain, 2012. <http://vladowiki.fmf.uni-lj.si/doku.php?id=events:sda12:index>
12. **Correspondence Analysis for Symbolic Multi-Valued Variables** presented at the Workshop in Symbolic Data Analysis, Namur, Belgium, June 7–9, 2011. <http://vladowiki.fmf.uni-lj.si/doku.php?id=events:sda11:index>
13. **Correspondence Analysis for Symbolic Multi-Valued Variables**, presented at the Correspondence Analysis and Related Methods conference. Rotterdam, The Netherlands, June 25–27, 2007. <http://www.carme-n.org/carme2007/>

G. INVITED TALKS:

1. In October 2019, at Tecnológico de Monterrey in Mexico, I gave the lecture **Optimized dimensionality reduction methods for interval-valued variables and its applications to face recognition.**

2. In October 2019, at Tecnológico de Monterrey in Mexico, I gave the lecture **From Statistics to Data Science through the concepts of Data Mining, “Machine Learning”, and “Big Data”**.
3. In October 2019, at Tecnológico de Monterrey in Mexico, I taught a short course on the **RSDA** package.
4. During Computer Science and Informatics Week 2019 at the University of Costa Rica, I gave the lecture **From Statistics to Data Science, through the concepts of “Big Data”, “Data Mining”, and “Machine Learning”**.
5. In the Department of Mathematics Education at the University of Costa Rica, during the first semester of 2019, I gave the lecture **Mathematical Concepts Applied in Data Science**.
6. Opening lecture **From Statistics to Data Science through the concept of Big Data**. Costa Rica Big Data School, December 3–7, 2018, Costa Rica National High Technology Center. <http://cluster.cenat.ac.cr/bigdata/>
7. Lecture **The Language of Data Science: R or Python?** Alumni Day, School of Informatics, National University, October 28, 2018.
8. Opening lecture **Concepts in Data Science**. First Data Science Meeting 2018, organized by Grupo ICE.

G. SOFTWARE PUBLICATIONS ON CRAN:

1. **RSDA** package developed for the **R** platform to perform Symbolic Data Analysis.
<https://cran.r-project.org/web/packages/RSDA/index.html>
Downloaded from CRAN more than 30,095 times.
2. **discoverR** package developed for the **R** platform to perform Exploratory Data Analysis through a Shiny interface.
<https://cran.r-project.org/web/packages/discoverR/index.html>
Downloaded from CRAN more than 22,266 times.
3. **predictoR** package developed for the **R** platform to perform Predictive Data Analysis through a Shiny interface.
<https://cran.r-project.org/web/packages/predictoR/index.html>
Downloaded from CRAN more than 15,845 times.
4. **regressoR** package developed for the **R** platform to generate predictive models.
<https://cran.r-project.org/web/packages/traineR/index.html>
Downloaded from CRAN more than 13,472 times.

5. **traineR** package developed for the **R** platform to perform Classical Multivariate Regression, Ridge Regression, LASSO Regression, KNN Regression, CART Regression, Deep Learning Regression, among others, through a Shiny interface.

<https://cran.r-project.org/web/packages/regressoR/index.html>

Downloaded from CRAN more than 11,750 times.

The download information above can be verified from CRAN using the following **R** code:

```
library(dlstats)
descargas <- dlstats::cran_stats(c("discover", "predictoR", "regressoR",
                                   "traineR", "RSDA"))
sum(descargas$downloads)
sum(descargas[descargas$package == "RSDA", ]$downloads)
sum(descargas[descargas$package == "discover", ]$downloads)
sum(descargas[descargas$package == "predictoR", ]$downloads)
sum(descargas[descargas$package == "regressoR", ]$downloads)
sum(descargas[descargas$package == "traineR", ]$downloads)
```

H. PUBLICATIONS:

1. **Regression Models for Symbolic Interval-Valued Variables.** Entropy 23, no. 4: 429, year 2021. <https://doi.org/10.3390/e23040429>.
2. **Optimized dimensionality reduction methods for interval-valued variables and its application to face recognition.** Published in the journal: Entropy, IF 2.419—Special Issue: Symbolic Entropy Analysis and Its Applications I, in 2019.
<https://www.mdpi.com/1099-4300/21/10/1016/htm>
<https://www.mdpi.com/1099-4300/21/10/1016>
3. **Shrinkage linear regression for symbolic interval-valued variables.** Published in Revue MODULAD, France, 2018, Issue 45.
<https://editions-rnti.fr/?inprocid=1002533>
4. **Correspondence Analysis: Study in Beliefs and Styles of Teaching Teachers Mathematics.** With Annia Espeleta. Revista Educación 42(2), 598–628, e-ISSN: 2215-2644, July–December, 2018.
<https://revistas.ucr.ac.cr/index.php/educacion/article/view/28911>
5. **Principal Curves and Surfaces to Interval Valued Variables.** With Jorge Arce. Springer International Publishing AG 2016 M. Montes-y-Gómez et al. (Eds.): IBERAMIA 2016, LNAI 10022, pp. 297–309, 2016. DOI: 10.1007/978-3-319-47955-2_25.
https://link.springer.com/chapter/10.1007%2F978-3-319-47955-2_25
6. **INTERSTATIS: The STATIS method for interval valued data.** With David Corrales. Revista de Matemática: Teoría y Aplicaciones 2013 20(2): 19 CIMPA, UCR ISSN: 1409-2433.

7. **Measuring Contribution of HTML Features in Web Document Clustering**, presented at XXXIII Latin American Conference on Informatics, October 9–12, San José, Costa Rica, CLEI 2007.
8. **I–Scal: Symbolic Multidimensional Scaling of Interval Dissimilarities**, with P.J.F. Groenen, S. Winsberg, and E. Diday, published in COMPUTATIONAL STATISTICS & DATA ANALYSIS, the Official Journal of the International Association for Statistical Computing.
9. **Using Symbolic Objects to Cluster Web Documents** with E. Meneses was accepted for the World Wide Web Conference 2006. See <http://www2006.org/authors/>.
10. **Applications of Histogram Principal Components Analysis**, published in ECML/PKDD 2004, The 15th European Conference on Machine Learning (ECML) and the 8th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), Pisa, Italy, 2004.
11. **The Knowledge Mining Suite (KMS)**, published in ECML/PKDD 2004, The 15th European Conference on Machine Learning (ECML) and the 8th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), Pisa, Italy, 2004.
12. **Correspondence Factorial Analysis for Symbolic Multi–Valued Variables**, presented at IFCS-2004 (The 2004 Meeting of the International Federation of Classification Societies), Chicago, USA, 2004.
13. **Multidimensional Scaling for Interval Data: INTERSCAL**, Psychometrika Journal, University of Illinois, United States of America.
14. **Symbolic Correlation Circle in Principal Component Analysis**, published in the 7th conference of the International Federation of Classification Societies, July 11–14, 2000, Namur, Belgium.
15. **Symbolic Pyramidal Clustering: An Algorithm and Software**, published in the 7th conference of the International Federation of Classification Societies, July 11–14, 2000, Namur, Belgium.
16. **Multidimensional Scaling for Interval Data**, published in the 7th conference of the International Federation of Classification Societies, July 11–14, 2000, Namur, Belgium.
17. **Generalization of the Principal Components Analysis to Histogram Data**, published in the 4th European Conference on Principles and Practice of Knowledge Discovery in Data Bases, September 12–16, 2000, Lyon, France.
18. **Pyramidal Clustering Algorithms in ISO-3D Project**, published in the 4th European Conference on Principles and Practice of Knowledge Discovery in Data Bases, September 12–16, 2000, Lyon, France.

19. **Algorithms for symbolic pyramidal clustering**, forthcoming in Revista de Matemáticas: Teoría y Aplicaciones, Issue 7, 2000, University of Costa Rica.
20. **Generalizations of Principal Components Analysis**, publication pending in Revue de Statistiques Appliquée, Paris, France.
21. Co-editor, together with Professor Edwin DIDAY, of the proceedings of the conference “**4th European Conference on Principles and Practice of Knowledge Discovery in Data Bases**”, September 12–16, 2000, Lyon, France (copy of the cover attached).
22. **Introduction to Object-Oriented Programming in C++ for Windows Environments**, Editorial Tecnológica del I.T.C.R., 1997.
23. **Descriptive discriminant analysis: theory, algorithm, and software**, published in Revista de Matemáticas: Teoría y Aplicaciones, Issue 1, 1999, University of Costa Rica.
24. **Algorithm and implementation of correspondence factor analysis**, published in Revista de Matemáticas: Teoría y Aplicaciones, Issue 2, 1997, University of Costa Rica.
25. **Implementation of algorithms for numerical analysis in Mathematica**, published by the University of San Carlos of Guatemala, Series of Mathematics Booklets, 1997.
26. **PIMAD 2.1: The Algorithms**, published in the proceedings of the tenth Data Analysis Congress, held at the University of Costa Rica in 1997.
27. **PIMAD 2.1: User Guide**, published in the proceedings of the tenth Data Analysis Congress, held at the University of Costa Rica in 1997.
28. **Algorithm and implementation of the Statis method**, published in the proceedings of the ninth Data Analysis Congress, held at the University of Costa Rica in 1995.
29. **Probability exercises**, published by the publications office of I.T.C.R. in 1990 and 1991.
30. **Introduction to L^AT_EX**, published by the publications office of I.T.C.R. in 1990 and by the publications office of U.C.R. in 1992.
31. **The projected gradient method**, published in Revista Ciencias Matemáticas de la U.C.R. Volume 3, Issue 1, 1992.
32. **A conceptual model of visual programming for the designer in SDE (educational software)**, published in Revista Tiempo Compartido of I.T.C.R. Volume 3, Issue 2, 1992.
33. **Computer-assisted mathematics teaching**, published in the proceedings of the First Central American Meeting of Mathematicians, National Autonomous University of Nicaragua, U.N.A.N., 1993.
34. **Need for Training Educational Informatics Teachers**, published in the proceedings of the First Central American Meeting of Mathematicians, National Autonomous University of Nicaragua, U.N.A.N., 1993.

35. **Programming paradigms**, Proceedings of the 7° Data Analysis Congress, held at the University of Costa Rica in 1992.
36. **Object-oriented programming: applications to data analysis**, Proceedings of the 7° Data Analysis Congress, held at the University of Costa Rica in 1992.
37. **Principal Component Analysis: An Object-Oriented Implementation**, Proceedings of the Second Central American Meeting of Mathematics, University of Costa Rica, Western Campus, 1994.
38. **PIMAD: A system for performing Principal Component Analysis**, Tecnología en Marcha journal, 1996.
39. **Topics in Nonlinear Programming**. Thesis submitted for the Licentiate Degree in Pure Mathematics, School of Mathematics, U.C.R.
40. **Object-Oriented Development: An Application to Data Analysis**. Thesis submitted for the degree of Magister Scientae in Computer Science, Department of Computer Science, I.T.C.R.
41. **Classification et Modèles Linéaires en Analyse des Données Symboliques**. Thesis submitted for the Doctorate of the U.F.R. Mathématique de la Décision, University of Paris IX – Dauphine, France.