

Curriculum Vitae



Personal information

Name	TREJOS-ZELAYA, Javier
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Country of Citizenship	Costa Rica
Date of birth	April 17th, 1961
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Professional experience

Position	Professor, University of Costa Rica (UCR), San José
Dates	July 1993-present (full professor since october 1996)
Main functions and responsibilities	Teaching, research, social action
Position	Dean, Faculty of Science, UCR
Dates	May 2012–May 2020
Main functions and responsibilities	Academic administration
Position	Director, Graduate Program in Mathematics, UCR
Dates	Oct 1996–Jan 2001 and Jan 2003–Jan 2005
Main functions and responsibilities	Academic administration
Position	Director, Research Center in Pure and Applied Maths, UCR
Dates	July 2006–July 2010
Main functions and responsibilities	Academic administration
Position	Invited professor, Université de Limoges, France
Dates	Jan–Jul 1999 and Sep– Nov 2010
Main functions and responsibilities	Teaching, research
Position	Invited professor, Universidad Autónoma Metropolitana, Mexico
Dates	Jan 2001–Jan 2002
Main functions and responsibilities	Teaching, research

Education

Degree obtained	Doctor in Applied Mathematics, mention “Très Honorable” .
Advisor	Prof. Dr. Yves Schektman
Dissertation	<i>Contribution à l'acquisition automatique de connaissances à partir de données qualitatives</i>
Institution	Université Paul Sabatier - Toulouse III, Toulouse, France. 1994
Degree obtained	Diplôme d'Études Approfondies (D.E.A.) in Applied Mathematics, equivalent to a Master's degree
Main lectures and professional skills	Analyse des Données, Calcul Stochastique, Complexité des Algorithmes, Analyse Numérique, Optimisation.
Institution	Université Paul Sabatier - Toulouse III, Toulouse, France. 1989.
Degree obtained	License in Mathematics
Main lectures and professional skills	Analysis, Algebra, Complex Variable, Topology, Geometry, Numerical Analysis, Data Analysis, Probability, Functional Analysis
Institution	University of Costa Rica. 1988

Capacities and personal skills

Mother tongue
Other languages

Spanish
French¹, English²

French
English

Understanding		Speaking		Writing
Listening	Reading	Interaction	Oral Capacity	
Full	Full	Full	Full	Full
Full	Full	Full	Full	Full

¹ PhD thesis in French, 1994; Diplôme de Langue Française, All.Fr. 1987.

² Diplôme Univ. Langue Scientifique [English], U.P.Sabatier 1991.

Organizing skills and capacities

Main organizer of several national and international courses, seminars and conferences
National coordinator of two international projects (6x4 UEALC, INNOVA-CESAL)
Researcher in international networks
Director of the Advanced Studies Institute, UCR (UCREA)
Organizer of over 15 international conferences on applied mathematics in Costa Rica (9th-23rd SIMMAC) (1st-4th SIME)
Founder and president of the Latin American Society for Classification and Data Analysis (SoLCAD), member of the boards: International Federation of Classification Societies (IFCS) and Latin American Regional Section of the International Association of Statistical Computing

Technical skills and capacities

Teaching in undergraduate and graduate courses (in Costa Rica and other countries in Latin America and Europe)
Advisor of 20 M.Sc. and License thesis; member of the jury in 15 M.Sc. and License thesis, and in 3 Doctorate thesis in France
Researcher in several projects in Applied Mathematics, including interdisciplinary research with colleagues in Agronomics, Engineering, Economics, Biology, Physics, Political Sciences
Consulting with external agents (Foundations, Banks, Stocks & Shares, public institutions)

Computer skills

Statistical and mathematical software (R, Statistica, SPSS, Matlab), programming (Pascal, Fortran), typographic processors (Latex), office software (Microsoft Office, OpenOffice)

Other skills and capacities

Chief editor, Journal *Revista de Matemática: Teoría y Aplicaciones* (since 1994)
Member of the Scientific Committee in several international conferences and scientific journals.

Honors and awards

1. Grant from the French Government, 1988-1993; grant complement from the University of Costa Rica
2. Honor “Très Honorable” for doctorate dissertation, University Paul Sabatier, France. 1994
3. International Prize “Simon Régnier” 1996, given by the *Société Francophone of Classification* (French-speaking Soc. of Classif.)
4. Grant from the *Deutscher Akademischer Austauschdienst* (German Service of Academic Exchange), 7 Abr-10 May 1997
5. Prize TWAS-Conicit Young Scientist, Costa Rica, 2000
6. President of the Jury, Research Prize UCR, 2007
7. Member of the Jury, National Prize on Science and Technology, 2008, 2012, 2016
8. Grant for the Creativity and Excellence, Florida ice & Farm Co., 2008.

Books

1. Trejos, J.; Castillo, W.; González, J. (2014) *Análisis Multivariado de Datos. Métodos y Aplicaciones*. Editorial de la Universidad de Costa Rica, San José.
2. Trejos, J., ed. (2012) *Contribuciones a la Transformación de la Docencia Universitaria. El Proyecto Innova-Cesal en la Universidad de Costa Rica*. SIEDIN, San José.
3. Rosales, F.E.; Pocasangre, L.E.; Trejos, J.; Serrano, E.; Peña, W. (2008) *Guía de Diagnóstico de la Calidad y Salud de Suelos Bananeros*. Bioersity International, San José. 79 pp.
4. Knight, J.; Trejos, J. (2008) *Encuestas Generales del Proyecto 6x4 UEALC. Pertinencia de graduados e investigadores universitarios par alas necesidades de la sociedad. ¿Qué nos dicen los empleadores? Caso de Costa Rica*. Asoc. Colombiana de Universidades ASCUN, Bogotá. 189 pp.
5. Trejos, J.; Moya, E. (1997) *Introducción a la Estadística Descriptiva*. Sello Latino, San José. 165 pp. ISBN 9968-780-02-2, classification: 519.53 T787-i

Main Articles

1. Trejos, J.; Amaya, L.E.; Jiménez, A.; Murillo, A.; Piza, E.; Villalobos, M. (2020) “Clustering Binary Data by Application of Combinatorial Optimization Heuristics”, Arxiv paper number <https://arxiv.org/abs/2001.01809v1>. Accepted for publication as a book chapter in: T. Chadjipadelis, B. Lausen, A. Markos, T.R. Lee, A. Montanari, R. Nugent (Eds.) *Data Analysis and Rationality in a Complex World*, Springer Series *Studies in Classification, Data Analysis, and Knowledge Organization*, Springer Verlag, Berlin.
2. Chavarría, J.; Fallas, J.J.; Trejos, J. (2020) “Clustering via ant colonies: Parameter analysis and improvement of the algorithm”, in: T. Imaizumi, A. Nakayama & S. Yokoyama (Eds.) *Advanced Studies in Behaviormetrics and Data Science*. Springer Nature, Singapore. Doi: 10.1007/978-981-15-2700-5_16
3. Trejos, J.; Villalobos, M.A.; Espinoza, J.L. (2016) “Variable selection in multiple linear regression using a genetic algorithm”, in: P. Vasant, G.W. Weber, V.N. Dieu (Eds.) *Handbook of Research on Modern Optimization Algorithms and Applications in Engineering and Economics*. Engineering Science Reference (an imprint of IGI Global), pp. 133–159. Doi: 10.4018/978-1-4666-9644-0.ch005
4. Trejos, J.; Villalobos, M.; Murillo, A.; Chavarría, J.; Fallas, J.J. (2014) “Evaluation of optimization metaheuristics in clustering”, *IEEE 2014 Int. Conf. on Bio-inspired Intelligence*, Liberia: 154–161. Doi: 10.1109/iwobi.2014.6913956
5. Piza, E.; Trejos, J.; Bermúdez, E. (2014) “Comparison of Nelson-Siegel and Svensson models in the optimization of yield curves in Costa-Rican market”, *Science & Technology Journal* 30(2): 16–26. URL: <https://revistas.ucr.ac.cr/index.php/cienciaytecnologia/article/view/19994>
6. Delgado, E.; Trejos, J.; Villalobos, M.; Martínez, G.; Lobo, D.; . . . , Pocasangre, L.E. (2010) “Determinación de un índice de calidad y salud de suelos para plantaciones bananeras en Venezuela”, *Interciencia: Revista de Ciencia y Tecnología de América*, **35**(12): 927–933. URL: <https://dialnet.unirioja.es/servlet/articulo?codigo=3579773>
7. Groenen, P.J.F.; Rosmalen, J. van; Trejos, J.; Castillo, W. (2009) “Optimization strategies for two-mode partitioning”, *Journal of Classification* **26**(2): 155–181. Doi: <https://doi.org/10.1007/s00357-009-9031-2>

Main Articles

9. Trejos, J.; Villalobos, M.A. (2007) "Partitioning by particle swarm optimization", in: P. Brito, P. Bertrand, G. Cucumel & F. de Carvalho (Eds.) *Selected Contributions in Data Analysis and Classification*. Springer, Berlin, 235–244. Doi: 10.1007/978-3-540-73560-1_22
10. Trejos, J.; Murillo, A.; Piza, E. (2004) "Clustering by ant colony optimization", in: D. Banks, L. House, F.R. McMorris, P. Arabie & W. Gaul (Eds.) *Classification, Clustering, and Data Mining Applications*. Springer, Berlin: 25–32. Doi: 10.1007/978-3-642-17103-1_3
11. Castillo, W.; Trejos, J. (2002) "Two-mode partitioning: review of methods and application of tabu search", in: K. Jajuga, A. Sokolowski & H.-H. Bock (Eds.) *Classification, Clustering and Data Analysis*. Springer, Berlin: 43–51. Doi: 10.1007/978-3-642-56181-8_4
12. Groenen, P.J.F.; Mathar, R.; Trejos, J. (2000) "Global optimization methods for multidimensional scaling applied to mobile communications", in: W. Gaul, O. Opitz & M. Schader (Eds.) *Data Analysis. Scientific Modeling and Practical Application*. Springer, Berlin: 459–469. Doi: 10.1007/978-3-642-58250-9_37
13. Trejos, J.; Castillo, W.; González, J.; Villalobos, M. (2000) "Application of simulated annealing in some multidimensional scaling problems", in: H.A.L. Kiers, J.-P. Rasson, P.J.F. Groenen, & M. Schader (Eds.): *Data Analysis, Classification and Related Methods*. Springer, Berlin: 297–302. Doi: 10.1007/978-3-642-59789-3_47
14. Trejos, J.; Castillo, W. (2000) "Simulated annealing optimization for two-mode partitioning", in: W. Gaul & R. Decker (Eds.), *Classification and Information at the Turn of the Millenium*. Springer, Berlin: 133–142. Doi: 10.1007/978-3-642-57280-7_15
15. Castillo, W.; Trejos, J. (2000) "Recurrence properties in two-mode hierarchical clustering", in: W. Gaul & R. Decker (Eds.), *Classification and Information at the Turn of the Millenium*. Springer, Berlin: 68–73. Doi: 10.1007/978-3-642-57280-7_7
16. Trejos, J.; Murillo, A.; Piza, E. (1998) "Global stochastic optimization for partitioning", in: A. Rizzi et al. (Eds.), *Advances in Data Science and Classification*. Springer, Berlin: 185–190. Doi: 10.1007/978-3-642-72253-0_25
17. Trejos, J. (1993) "A simulated annealing implementation for oblique varimax rotations", *Applied Stochastic Models and Data Analysis*, J. Janssen & C. H. Skiadas (Eds.), Vol. II. World Scientific, Singapore: 981–989.