



Ronny Vallejos

Associate Professor, Department of Mathematics, Universidad Técnica Federico Santa María, Chile

Education

- 1990–1995 **B.S. Mathematics**, *Universidad Técnica Federico Santa María*, Valparaíso, Chile.
- 1996–1998 **Master of Science in Mathematics**, *Universidad Técnica Federico Santa María*, Valparaíso, Chile.
- 2000–2002 **Master of Science in Statistics**, *University of Connecticut*, Storrs, CT, USA.
- 2003–2006 **Ph. D. in Statistics**, *University of Maryland Baltimore County*, Baltimore, MD, USA.

Master Thesis in Mathematics

- Title *Robust Estimation in Spatial ARMA Processes*
- Adviser Dr. Héctor Allende Olivares
- Description In this work I extended the GM estimators for spatial ARMA processes. The convergence of the estimation algorithm was established. Some applications to image processing were studied.

Ph.D. Dissertation

- Title *A Similarity Coefficient for the Association Between Two Spatial or Time Sequences*
- Adviser Dr. Andrew L. Rukhin
- Description In this work we studied the codispersion coefficient as a measure of similarity between two spatial processes. The asymptotic properties for the sample coefficient were proved for spatial autoregressive processes defined on a regular grid on the space.

Honors and Scholarships

- 1996 CONICYT scholarship for a Master of Science in Mathematics at UTFSM, Chile.
- 2000 Presidential scholarship for Ph.D. studies in USA.

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- 2002 Winner of the student paper competition (Computational Statistics Section) organized by the American Statistical Association.
- 2004 Best TA of the year in the Department of Mathematics and Statistics, University of Maryland Baltimore County, USA.
- 2005 Second place in the 27th research conference, UMB-UMBC. Baltimore, USA.
- 2006 First place in the 28th research conference, UMB-UMBC. Baltimore, USA.
- 2013 Teacher of excellence award, Universidad Técnica Federico Santa María, Chile.
- 2014 Teacher of excellence award, Universidad Técnica Federico Santa María, Chile.
- 2015 teacher of excellence award, Universidad Técnica Federico Santa María, Chile.
- 2016 teacher of excellence award, Universidad Técnica Federico Santa María, Chile.

Academic Experience

- 2015-present: Associate Professor, Departamento de Matemática, Universidad Técnica Federico Santa María, Chile.
- 2010-2014: Assistant professor, Departamento de Matemática, Universidad Técnica Federico Santa María, Chile
- 1998 - 2009: Associate Professor, Departamento de Estadística, Universidad de Valparaíso, Chile

Research Interests

Spatial statistics, statistical image processing, robust methods, measures of association between spatial/time processes, time series.

Journal Articles

1. Osorio, F., Vallejos, R., Barraza, W., Ojeda, S., Landi, M. (2021). Statistical estimation of the structural similarity index for image quality assessment. *Signal, Image and Video Processing* (accepted).
2. Vallejos, R., Acosta, J. (2021). Effective sample size for multivariate spatial processes with an application to soil contamination. *Natural Resource Modeling* (to appear).
3. Acosta, J., Alegría, A., Osorio, F., Vallejos, R. (2021). Assessing the effective sample size for large spatial datasets: A block likelihood approach. *Computational Statistics and Data Analysis* 162, 107282.
4. Vallejos, R., Pérez, J., Ellison, A., Richardson, A. (2020). A spatial concordance correlation coefficient with an application to image analysis. *Spatial Statistics* 40, 100405.
5. Vallejos, R., Garate, A., Gomez, M. (2019). Comovement Among Returns of Private Chilean Pension System. *International Review of Applied Economics* 33, 228-240
6. Vallejos, R., Buckley, H., Case, B., Acosta, J., Ellison, A.M. (2018) Sensitivity of Codispersion to Noise and Error in Ecological and Environmental Data. *Forests* 2018, 9, 679.
7. Pistonesi, S., Martinez, J., Ojeda, S. M., Vallejos, R. (2018). Structural Similarity Metrics for Quality Image Fusion Assessment: Algorithms. *Image Processing On Line* 8, 245-368.
8. Acosta, J., Vallejos, R. (2018). Effective sample size for spatial regression processes. *Electronic Journal of Statistics* 12, 3147-3180.
9. Vallejos, R., Yandun, F., San Martín, Escobar, V., Román, C., Auat Cheein, F. (2018). Assessing the estimation of trawling catches by using LiDAR sensor technology. *Ocean and Coastal Management* 165, 99-108.

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10. Acosta, J., Vallejos, R., Griffith, D. (2018). On the effective geographic sample size. *Journal of Statistical Computation and Simulation* 88, 1958-1975.
11. Ojeda, S., Britos, G., Vallejos, R. (2018). An image quality index based on coefficients of spatial association with an application to image fusion. *Spatial Statistics* 23, 1-16.
12. Acosta, J., Osorio, F., Vallejos, R. (2016). Effective sample size for line transect models with an application to marine macroalgae. *Journal of Agricultural, Biological and Environmental Statistics* 21, 407-425.
13. Vallejos, R., Mancilla, D., Acosta, J. (2016). Image similarity assessment based on measures of spatial association. *Journal of Mathematical Imaging and Vision* 56, 77-98.
14. Buckley, H., Bradley, S., Vallejos, R., Camarero, J., Liang, E., Wang, Y., Elisson, A. (2016). Detecting ecological patterns along environmental gradients: alpine treeline ecotones. *Chance* 29, 10-15.
15. Bevilacqua, M., Vallejos, R., Velandia, D. (2015). Assessing the significance of the correlation between the components of a bivariate Gaussian random field. *Environmetrics* 26, 545-556.
16. Vallejos, R., Ojeda, S. (2015). A conversation with Oscar Bustos (with comments). *Chilean Journal of Statistics* 6, 81-94
17. Vallejos, R., Osorio, F., Mancilla, D., (2015). The codispersion map: a graphical tool to visualize the association between two spatial variables. *Statistica Neerlandica* 69, 298-314.
18. Vallejos, R., Mallea, A., Herrera, M., Ojeda, S., (2015). A multivariate geostatistical approach for landscape classification from remotely sensed image data. *Stochastic Environmental Research and Risk Assessment* 29, 369-378.
19. Vallejos, R., Osorio, F., (2014). Effective sample size for spatial process models. *Spatial Statistics* 9, 66-92.
20. Vallejos, R., Batista, V.S., Fabr e, N.N., Acosta, J., (2013). The application of a general time series model to floodplain fisheries in the Amazon. *Environmental Modelling and Software* 48, 202-212.
21. Cuevas, F., Porcu, E., Vallejos, R., (2013). Study of Spatial Relationships Between Two Sets of Variables: A Nonparametric Approach. *Journal of Nonparametric Statistics* 25, 695-714.
22. Acevedo, C., Cornejo, M., Olguin, Y., Vallejos, R., Brown, D., (2013). Dehydrogenase Enzymes Associated to Glycolysis 1 in Beef Carcasses Stored at 0°C. *Food and Bioprocess Technology* 6, 1696-1702.
23. Vallejos, R., (2012). Testing for the absence of correlation between two spatial or temporal sequences. *Pattern Recognition Letters* 33, 1741-1748.
24. Ojeda, S., Vallejos, R., Lamberti, P., (2012). A Measure of Similarity Between Images Based on the Codispersion Coefficient. *Journal of Electronic Imaging* 21, 023019.
25. Ojeda, S., Vallejos, R., Bustos, O., (2010). A New Image Segmentation Algorithm with Applications to Image Inpainting. *Computational Statistics & Data Analysis* 54, 2082-2093.
26. Bustos, O., Ojeda, S., Vallejos, R., (2009). Spatial ARMA Models and Its applications to Image Filtering. *Brazilian Journal of Probability and Statistics* 23, 141-155.
27. Bustos, O., Ojeda, S., Ruiz, M., Vallejos, R., Frery, A., (2009). Asymptotic Behavior of RA-estimates in Autoregressive 2D Gaussian Models . *Journal of Statistical Planning and Inference* 139, 3649-3664.
28. Vallejos, R. (2008). Assessing the Association between Two Spatial or Temporal Sequences. *Journal of Applied Statistics* 35, 1323-1343.

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29. Rukhin A., Vallejos, R., (2008). Codispersion Coefficient for Spatial and Temporal Series . Statistics and Probability Letters 78, 1290-1300.
30. Vallejos R., Garcia-Donato, G., (2006). Bayesian Analysis of Quarter Plane Moving Average Models. Journal of Statistical Computation and Simulation 76, 131-147.
31. Vallejos, R., Mardesic, T., (2004). A Recursive Algorithm to Restore Images Based on Robust Estimation of NSHP Autoregressive Models. Journal of Computational and Graphical Statistics 13, 674-682.
32. Ojeda, S., Vallejos, R., Lucici, M., (2002). Performance of Robust RA Estimator for Bidi- mensional Autoregressive Models. Journal of Statistical Computation and Simulation 72, 47-62.
33. Allende, H., Galbiati, J., Vallejos, R., (2001). Robust Image Modeling on Image Processing. Pattern Recognition Letters 22, 1219-1231.
34. Ojeda, S., Vallejos, R., Lucini, M., (2001). Estimacion Robusta en Modelos Para Imágenes. Información Tecnológica 12, 139-144.
35. Allende, H., Galbiati, J., Vallejos, R.O., (1998). Digital Image Restoration Using Autoregressive Time Series Models. Bulletin European Spatial Agency 434, 53-59.

Book Chapters

Book Chapters

1. Vallejos, R., Ojeda, S., (2012). Image Segmentation and Time Clustering Series Based on Spatial and Temporal ARMA Processes. Advances in Image Segmentation, InTech Publications, ISBN 980-953-307-581-0, <http://dx.doi.org/10.5772/50513>.

Books

1. Vallejos, R. , Osorio, F., Bevilacqua, M. (2020). Spatial Relationships Between Two Georeferenced Variables: With Applications in R. Springer, Berlin.

Proceedings

1. Vallejos, R. , Pérez, J., Ellison, A., Richardson, A. (2018). Constructing a spatial concordance correlation coefficient. Proceesings of the 9th International Workshop on Spatio-Temporal Modelling. Montpellier, France, 13-15 June, 2018. Edited by L. Bell and J. Mateu. pp. 49-52.
2. Vallejos, R. , Acosta, J., (2016). Spatial effective sample size for regression models. Proceesings of the 8th International Workshop on Spatio-Temporal Modelling. Valencia, Spain, 1-3 June, 2016. Edited by A. Iftimi and J Mateu. pp. 145-147.
3. Pistonesi, S., Martinez, J., Ojeda S., Vallejos, R. (2015). A novel quality image fusion assessment based on maximum codispersion. CIARP 2015, Uruguay: pp. 383-390.
4. Cuevas, F., Porcu, E., Vallejos, R., (2013). A nonparametric study of the spatial association between forest variables. Proceedings of the 28th International Worshop on Statistical Modelling, July 8-12, Palermo, Italy
5. Vallejos, R., Moreno, C., (2011). Effective Sample Size in Spatial Modeling. Int. Statistical Inst.: Proc. 58th World Statistical Congress, 2011, Dublin (Session CPS029).
6. Miranda, M., Vallejos, R., (2009). Testing Spatial Isotropy by Using a Nonparametric Bootstrap Approach. Proceedings of StatGIS. Milos, Greece.
7. Vallejos, R., Miranda, M., (2009). The Codispersion Coefficient: An Application in the Evaluation

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of the Performance of Different Spatial Interpolators. Proceedings of StatGIS. Milos, Greece.

Software

1. Osorio F, Vallejos R, Cuevas, F (2012). SpatialPack: A package to assess the association between two spatial processes. R package version 0.2, URL: <http://cran.r-project.org/web/packages/SpatialPack/>

Awarded Grants

1. 2021: Fulbright Specialist Program. Visiting Research Fellowship to Aaron Ellison (Harvard University) to visit the UTFSM, Chile.
1. 2020-2021: Estimation of the Image Similarity Index Using a Regression Model with Errors in the Response Variable. USM PI_LIR_2020_20 (PI).
2. 2020-2021: Concordance and Covariance Functions for Environmental Modelling. Proyecto MATH-AMSUD grant 20-MATH-03 (PI).
3. 2018-2019: Information and Communication Technology for the Probability and Statistics Course at UTFSM. Proyecto Oliver Espinoza. DGD-USM (PI).
4. 2018-2019: Effective Sample Size for Spatial Processes with Nearly Singular Covariance Matrices. Proyecto Interno USM PI-L-18-20 (PI).
5. 2014-2021: Advanced Center for Electronic and Electrical Engineering. Proyecto Basal FB-0008 (Co-PI).
6. 2015-2016: Estimation of Partially Linear Covariance Functions With an Application to the Computation of the Effective Sample Size for Georeferenced Data. Proyecto USM 12-15-09 (PI).
7. 2012-2015: Association Characteristics Between Two Spatial Processes and Reduction of Sample sizes in Spatial Statistics. Proyecto Fondecyt N° 1120048 (PI).
8. 2012-2013: Information Criteria and Diagnostics for Spatial Regression Processes. Proyecto USM-12.12.05 (PI).
9. 2011-2013: Strengthening the Statistical Group in the Mathematics Department at UTFSM. Concurso Nacional de Inserción de Capital Humano Avanzado en la Academia, Conicyt N° 791100007 (PI).
10. 2011: Nonparametric Estimation of the Codispersion Coefficient: Theoretical and Applied Aspects. Proyecto CCTVal-Conicyt FB/01RV/11 (PI).
11. 2010-2011: Reduction of Sample Sizes in Spatial Statistics. Proyecto USM-12.10.03 (PI).
12. 2008-2009: Identification and Measurement of the Variables that Determine the Change in Total Productivity of Small Milk Producers in Southern Chile. Proyecto Interno, Universidad Austral de Chile (Co-PI).
13. 2008-2009: Two-dimensional Autoregressive Processes, Texture Segmentation and Spatial Similarity: Problems and Applications. Proyecto CECYT 05/B412, FAMAFA, Universidad Nacional De Córdoba, Argentina (Co-PI).
14. 2008-2010: A Similarity Coefficient for Spatial and Temporal Sequences. Proyecto Fondecyt de iniciación N° 1175095 (PI).
15. 1999-2000: Robust Estimation for Bidimensional Autoregressive models. DIPUV 09-99, Universidad de Valparaíso (PI).

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Courses (Last Five Years)

- Multivariate Analysis, Spring, 2021.
- Advanced Time Series, Fall 2020.
- Probability and Statistics for Engineering, Fall 2020.
- Time Series Analysis, Spring, 2020.
- Generalized Linear Models, Fall, 2019.
- Advanced Statistical Inference, Spring, 2019.
- Time Series Analysis, Fall, 2018.
- Research Seminar II, Spring, 2018.
- Probability and Statistics for Engineering, Fall, 2017.
- Linear Models, Spring, 2017.
- Research Seminar I, Fall, 2016.
- Spatial Statistics, Spring, 2016.

Professional Activities

Editor-in-Chief

- 2015-2018: Chilean Journal of Statistics

Associate Editor

- 2010-2014: Chilean Journal of Statistics

Journal Reviewing

- Spatial Statistics
- Statistics and Probability Letters
- Statistical Modeling
- Automatica
- Journal of Statistical Planning and Inference
- Computational Statistics and Data Analysis
- Mathematical Methods of Statistics
- Revista de la Sociedad Argentina de Estadística
- Chilean Journal of Statistics
- Stochastic Environmental and Risk Assessment
- Latin American Journal of Aquatic Research
- Journal of Applied Statistics
- Brazilian Journal of Probability and Statistics
- Revista de Economía Agraria
- Geographical Analysis
- International Journal of Geographical Information Science
- Entropy

Workshop organizing

12. III Latin American Conference on Statistical Computing, Costa Rica, 27/02 - 02/03, 2018.
11. 2nd Latin American Conference on Statistical Computing, Valparaíso, Chile, March 9-11, 2017.
10. First Workshop on Seismomatics, Valparaíso, Chile, January 5-9, 2015.
9. Latin American Congress of Statistical Societies (CLATSE), La Serena, Chile, October 20-23, 2014.
8. Fifth Workshop on Spatial Statistics and Image Modelling (SEEMI). Córdoba, Argentina, December, 10-12, 2013.

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7. Latin American Congress of Statistical Societies (CLATSE), Córdoba, October, 16-19, 2012.
6. Fourth Workshop on Spatial Statistics and Image Modelling (SEEMI). Valparaíso, Chile, November 21-23, 2011.
5. Third Workshop on Spatial Statistics and Image Modelling (SEEMI). Foz de Iguazú, Brasil, 2010.
4. Latin American Congress of Statistical Societies (CLATSE), Viña del Mar, Chile, October, 2010.
3. Second Workshop on Spatial Statistics and Image Modelling (SEEMI) (SEEMI). Córdoba, Argentina, 2009.
2. National Statistical Meeting. Temuco, Chile, 2009.
1. First Workshop on Spatial Statistics and Image Modelling (SEEMI), Valparaíso, Chile, December 11-12, 2008.

Professional Memberships

1. American Statistical Association
2. Chilean Statistical Society

Invited Talks

1. Modelling the Effective Sample Size for Multivariate Spatial Datasets. Seminar, Department of Statistics, Federal University of Bahia, Brazil, October 05, 2021.
1. Effective sample size for multivariate georeferenced variables. Data Science Workshop, Universidad de Valparaíso, May 18-19, 2021.
2. Progress and Challenges in the Implementation of Active Learning. George Masson University, Washington DC, USA, May 22, 2019.
3. Effective sample size for spatial regression models. Ciclo de Charlas Sobre Estadística Espacial. Universidad Nacional Mayor de San Marcos, Lima, Perú, October 20-12, 2016.
4. A Proposal for the Effective Sample Size for Georeferenced Variables. Plenary talk in the Spatial Statistics Conference held in Ohio, USA, June 4-7, 2013.
5. About the Effective Sample Size in Spatial Statistics. XL Jornadas Nacionales de Estadística, Valparaíso 23-25 octubre, 2013.
6. Assessing the Association Between Two Spatial Variables. Colloquium of the School of Economic, Political and Policy Sciences, University of Texas at Dallas, USA, March 04, 2013.
7. Introduction to Kriging and Cokriging. Seminario de Estadística, UCV, Mayo de 2009. Valparaíso, Chile.
8. Spatial Characteristics Between Spatial Processes. Primer Simposio de Estadística Espacial y Modelamiento de Imágenes. 11-12 de Octubre, 2008. Valparaíso, Chile.
9. Introduction to Point Processes on the Plane. XVI Semana de la Estadística en Valparaíso. 29-30 de Octubre, 2008.
10. Statistics: Challenges and Scopes. Universidad Adventista de Chile, Octubre 23, 2008.
11. Some Open Problems in Spatial Statistics. Facultad de Matemática, Astronomía y Física, Universidad Nacional de Córdoba, Argentina, 2008.
12. Effective Sample Size for Modelling Spatial Variables. Seminario Departamento de Estadística-CIMFAV. Universidad de Valparaíso, 2007.
13. Spatial ARMA Processes and its Applications. XV Semana de la Estadística en Valparaíso, 2007.
14. Association Characteristics in Spatial Statistics. Departamento de Matemática y Estadística,

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Universidad Nacional de Río Cuarto, Argentina, 2007.

15. Coefficients of Association Between Spatial Processes. Facultad de Matemática, Astronomía y Física, Universidad Nacional de Córdoba, Argentina, 2007.
16. Similarity Coefficients for Spatial Sequences. V Escuela de Invierno de Análisis Estocástico y Aplicaciones. Valparaíso, Chile, 2007.

Other Talks

1. La Matemática al Servicio de la Sociedad. Puertas Abiertas USM, Valparaíso, October 15, 2021.
2. Nearly singular covariance matrices for modelling georeferenced variables. World Conference on Natural Resource Modeling, Virtual conference, June 1-4, 2021.
3. Correlation integral for temporal and spatial sequences. V Latin American Conference on Statistical Computing (LACSC 2021), Monterrey, Mexico, April 20, 2021.
4. Assessing the concordance between two georeferenced variables. Webinar MATH-AMSUD proyect 20-MATH-03, August 04, 2020.
5. Effective sample size for georeferenced datasets. World Conference on Natural Resource Modeling, Valparaíso. Chile, January 8-10, 2020.
6. Modeling the Reduction of Sample Size for Spatial Datasets. Computational and Methodological Statistics (CMS), London, UK, December 15, 2019.
7. Constructing a spatial concordance correlation coefficient. METMA IX, Montpellier, France, June 12-15, 2018.
8. On a spatial concordance correlation coefficient. 61 st World Statistics Congress. Marrakech, Marroco, July 16-21, 2017.
9. Effective sample size for line transect sampling with an application to marine macroalgae. Spatial Statistics Conference, Avignon, France, June 9-12, 2015.
10. Image Similarity Assessment Based on Coefficients of Spatial Association. GRASPA, Bari, Italy, June 15-16, 2015.
11. Assessing the spatial association between two random fields. XI CLATSE, La Serena, Chile, October 20-23, 2014.
12. A Geostatistical Approach for Image Classification of Satellite Images. IMS Conference and Australian Annual Meeting, Sydney, Australia, July 7-10, 2014
13. A Geostatistical Approach for Image Classification of Satellite Images. Primer simposio de Sismomática, Universidad de Concepción, Octubre 14-15, 2013.
14. A Nonparametric Study of the Spatial Association Between Forest Variables. 28th International Workshop on Statistical Modelling. Palermo, Italy, July 8-12, 2013.
15. Local Influence in Partially Linear Covariance Structure Models. Décimo Congreso Latinoamericano de Sociedades de Estadística. Córdoba, October 16-19, 2012.
16. General Time Series Model to Explain and Predict Variables of Cyclical Systems: An Application to Floodplain Fisheries in the Amazon. COMCA, Antofagasta, agosto 1-4, 2012.
17. Estimation of Processes with a Partially Linear Covariance Structure. Décimo Congreso Latinoamericano de Sociedades de Estadística. Córdoba, Octubre 16-19, 2012.
18. A Non-parametric Way of Assessing the Spatial Association Between Two Sequences. 8th World

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- Congress in Probability and Statistics Istanbul, Turkey, July 9-14, 2012.
19. Nonparametric estimation of the codispersion coefficient. XXXVIII Jornadas Nacionales de Estadística, Pucón, October 23-27, 2011.
 20. Fish prediction and modelling in the Amazon river. Charla Explora. Colegio Austral, Valdivia, October 20, 2011.
 21. Effective Sample Size in Spatial Modeling. 58 th ISI World Statistics Congress, Dublin, August 21-26, 2011.
 22. Robust Estimation of the Codispersion Coefficient in Time Series. XI Jornadas Nacionales de Bioestadística, Talca, January 12-14, 2011.
 23. An Application of Spatial Point Patterns. Charla Explora-Conicyt: Juegos Estrategias y Azares de la Vida, Puchuncaví, November 17, 2010.
 24. Robust Estimation of the Codispersion Coefficient for Serial or Spatial Sequences. III Simposio de Estadística Espacial y Modelamiento de Imágenes (SEEMI), Foz de Iguazú, Brazil, December 14-16, 2010.
 25. Nonparametric Estimation Between the Association of Two Spatial Processes. IX CLATSE, Valparaíso, Chile, October 19-22, 2010.
 26. A Mispractice in Spatial Statistics: Sample Sizes Must be Carefully Determined. Simposio Nacional de Probabilidad y Estadística (SINAPE), San Pedro, SP, Brazil, July 26-30, 2010.
 27. An Image Segmentation Algorithm with Applications to Image Inpainting. Joint Statistical Meeting of the American Statistical Association, Vancouver, Canadá, July 31 - August 5, 2010.
 28. Some Applications of Spatial and Temporal Measures of Association. Segundo Simposio de Estadística Espacial y Modelamiento de Imágenes, Córdoba, Argentina, December 8-10, 2009.
 29. Comparison of Spatial Association Coefficients. XXXVI Jornadas Nacionales de Estadística, Temuco, October 6-9, 2009.
 30. Statistical Tools to Predict Georeferenced Variables. XXXVI Jornadas Nacionales de Estadística, Temuco, October 6-9, 2009.
 31. A Robust Estimator for the Codispersion Coefficient. XXXVI Jornadas Nacionales de Estadística, Temuco October 6-9, 2009
 32. The Codispersion Coefficient: An Application in the Evaluation of the Performance of Different Spatial Interpolators. StatGIS. Milos, Greece, June 17-19, 2009.
 33. Spatial Association Between Intrinsically Stationary Processes. Primer Simposio de la Sociedad Chilena de Reconocimiento de Patrones. Valparaíso, April, 2009.
 34. On Association Between Spatial Sequences. Reunión Grupo Científico PROSUL. Buenos Aires, Argentina, 2009.
 35. Image Segmentation Algorithm Based on the Estimation of Spatial Autoregressive Models. VIII CLATSE, Montevideo, Uruguay. 2008.
 36. On Codispersion Coefficient for Spatial and Temporal Sequences. Joint Statistical Meeting of the American Statistical Association. Denver, CO, USA, 2008.
 37. Effective Sample Size for Modelling Spatial Variables. VIII Jornadas Nacionales de Bioestadística. Santiago, Chile, 2008.

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38. Asymptotic Behavior of RA-estimates in Autoregressive 2D Processes. International Conference on Robust Statistics. Buenos Aires, Argentina, 2007.
39. A Measure of Similarity in Spatial Modeling. Multivariate Methods in Environmetrics. Chicago, USA, 2006.
40. A Similarity Coefficient for Spatial and Temporal Sequences. ICSA. Connecticut, USA, 2006.
41. A Recursive Algorithm to Restore Images Based in Robust Estimation of NSHP Autoregressive Models. JSM, New York, USA, 2002.
42. On Robust Algorithms to Restore Additive Contaminated Images. V CLATSE. Buenos Aires, Argentina, 2002.
43. A New Algorithm to restore Additive Contaminated Images. CLATSE IV, Mendoza, Argentina, 1999.
44. GM Robust Estimators for Bidimensional AR Processes. CLAPEM VII, Córdoba, Argentina, 1998.
45. Simulation of Bidimensional Autoregressive Models. Congreso de la Sociedad Chilena de Estadística, Valparaíso, 1997.

Former Students

Undergraduate:

19. Gabriel Vidal. Mathematical Engineering, Universidad Técnica Federico Santa María, January 05, 2021. Co-advised by Juan Yuz and Felipe Osorio.
18. Gabriel Molina. Mathematical Engineering, Universidad Técnica Federico Santa María, January 16, 2020.
17. Alberto Rubio. Mathematical Engineering, Universidad Técnica Federico Santa María, April 24, 2019. Co-advised by Asier Uriarte.
16. Javier Pérez. Mathematical Engineering, Universidad Técnica Federico Santa María, November 21, 2017.
15. Francisco Alfaro. Mathematical Engineering, Universidad Técnica Federico Santa María, August 22, 2017.
14. Wilson Barraza. Mathematical Engineering, Universidad Técnica Federico Santa María, June 20, 2017.
13. Angelo Gárate. Mathematical Engineering, Universidad Técnica Federico Santa María, October 04, 2016.
12. Consuelo Moreno. Mathematical Engineering, Universidad Técnica Federico Santa María, 2014. Co-advised by por Cristian Acevedo.
11. Jonathan Acosta. Mathematical Engineering, Universidad Técnica Federico Santa María, 2013. Co-advised by Felipe Osorio.
10. Guillermo Pérez. B. S. Statistics, Pontificia Universidad Católica de Valparaíso, 2011.
9. Francisco Cuevas. Mathematical Engineering, Universidad Técnica Federico Santa María, 2011.
8. Rubén Miranda. B.S. Statistics, Pontificia Universidad Católica de Valparaíso, 2009.
7. Vivian Contreras. Statistics Engineering, Universidad de Valparaíso, 2009.
6. Paulina Ríos. Statistics Engineering, Universidad de Valparaíso, 2009.
5. Juan Carlos Herrera. Statistics Engineering, Universidad de Valparaíso, 2009.
4. Marcelo Torres. B.S. Statistics, Pontificia Universidad Católica de Valparaíso, 2008.
3. Victor Jara. B.S. Statistics, Pontificia Universidad Católica de Valparaíso, 2008.

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2. Margarita Olivares. B.S. Statistics, Universidad de Valparaíso, 2000.
1. Fredy Lemus. Statistics Engineering , Universidad de Valparaíso, 2000.

Master:

8. Javier Pérez. M. S. in Mathematics, Universidad Técnica Federico Santa María, December 10, 2019. Co-advised by Jonathan Acosta.
7. Francisco Alfaro. M. S. in Mathematics, Universidad Técnica Federico Santa María, April 10, 2019. Co-advised by Wenceslao Unanue and Marcos Gómez.
6. Angelo Gárate. M. S. in Mathematics, Universidad Técnica Federico Santa María, January 04, 2018.
5. Diego Mancilla. M. S. in Mathematics, Universidad Técnica Federico Santa María, 2014.
4. Francisco Cuevas. M. S. in Mathematics, Universidad Técnica Federico Santa María, 2013. Co-advised by Felipe Osorio.
3. Juan Carlos Herrera. M. S. in Statistics, Universidad de Valparaíso, 2012.
2. Humberto Villalobos. M. S. in Statistics, Pontificia Universidad Católica de Valparaíso, 2009.
1. Lorena Pérez, M. S. in Statistics, Pontificia Universidad Católica de Valparaíso, 2009.

Ph.D.:

1. Jonathan Acosta. Ph.D. in Mathematics, Universidad Técnica Federico Santa María, May 05, 2017.

Current Students and Postdoctoral Fellows

1. John Gómez. Ph. D. in Mathematics. Universidad Técnica Federico Santa María (expected 2023).
2. Francisco Cuevas. Postdoctoral Fellow, Universidad Técnica Federico Santa María, AC3E, 2020-2021.

Visiting Researcher

16. Harvard Forest, Harvard University, USA, September 11-23, 2019.
15. Department of Mathematics, George Mason University, USA, May 19-26, 2019.
14. Department of Mathematics, Fundación Universitaria Konrad Lorenz, Colombia, Nov. 26-30, 2018.
13. Harvard Forest, Harvard University, USA, Sep. 24-Oct. 03, 2017.
12. Departament of Computer Sciences, Universidad Federal de Minas Gerais, Brasil, May 18-25, 2014.
11. School of Economic, Political and Policy Sciences, University of Texas at Dallas, USA, March 02-09, 2013.
10. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, May 22-25, 2012.
9. Institute of Biology and Health Sciences, Universidade Federal de Alagoas, Maceio AL, Brasil, May 15-22, 2011.
8. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, March 20-24, 2011.
6. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, June, 2010.
5. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina , July, 2009.
4. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, 2008.

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3. Department of Mathematics and Statistics, Universidad Nacional de Río Cuarto, Argentina, 2007.
2. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, 2007.
1. School of Mathematics, Astronomy and Physics, Universidad Nacional de Córdoba, Argentina, 1999.

Thesis Committee Membership (Ph.D.)

- Felipe Santibañez, Ph.D. in Electrical Engineering, Universidad de Chile, March 05, 2020.
- Francisco Cuevas, Ph.D. in Mathematics, Aalborg University, Denmark, June 12, 2019.
- Alfredo Alegría, Ph. D. in Mathematics, Universidad Técnica Federico Santa María, Chile, May 10, 2017.
- Roberto Fustos, Ph.D. in Mines Engineering. Universidad de Chile, Chile, July, 2017.
- Daisy Arroyo, Ph.D. in Mathematics. Universidad Católica del Norte, Chile, Abril 04, 2013.
- Rosangela Botinha Assunção, Ph.D. Agricultural Engineering. Universidad Estatal del Oeste de Parana, Brazil, December 16, 2010.

University Accreditation Committee

- CNA, Ph.D. in Mathematics, Universidad de los Andes, Colombia, August 15-17, 2018.
- CNA Ph.D. in Statistics, Pontificia Universidad Católica de Chile. July 2015.
- CNA, Statistics Engineering, Universidad de Concepción. November, 2014.
- Bachelor of Science in Mathematics, Universidad Adventista de Chile. July, 2013.

University Service

Course coordinator

- Spring Term 2017: MAT-022, Integral Calculus for Engineering (600 students).
- Fall Term 2012: MAT-022, Integral Calculus for Engineering (900 students).

Mathematics Department

- 2017-2018: Head of the Mathematics Department, Universidad Técnica Federico Santa María.
- 2013-2016: Outreach coordinator for Mathematical Engineering, Universidad Técnica Federico Santa María.
- 2012-present: Statistical Area Coordinator, Universidad Técnica Federico Santa María.
- Septiembre 2011-Enero 2012: (Interim Coordinator). Universidad Técnica Federico Santa María.

University Outreach

- Innovador Proyecto Aplica la Modelación Matemática a la Industria Forestal. University Newspaper note, UTFSM, September, 2013.
- Cuestionamientos al INE. Newspaper note, La Tercera, June 4, 2013. <http://www.latercera.com/noticia/opinion/correos-de-los-lectores/2013/05/896-521750-9-cuestionamientos-al-ine.shtml>
- Mathematical Modelling on TV. Video edited by DGC, UTFSM, 2013.
- An Introduction to Statistical Modelling. Talk Semana Sansana, October 2012. <http://vimeo.com/64906246>

Consulting

- IFOP (Chilean Fisheries Research). Statistical analysis and sample design for AMERB, Stage I, Valparaíso, 2020 (8.000 US dollars).
- IFOP (Chilean Fisheries Research). Estimation of trawling catches using LiDAR sensor technology.

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Valparaíso, 2015 (10.000 US dollars).

- IFOP (Chilean Fisheries Research). Determination of spatial sample size for transect data, Valparaíso, 2014 (12.000 US dollars).
- Bacon. Classification of customer profiles. Baltimore, MD, 2006 (10.000 US dollars).

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