

Santiago Velilla

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Curriculum Vitae

(April, 2018)

Place and date of birth

- Madrid, Spain, 9/26/60.

Education

- 1982: Licenciado en Ciencias Matemáticas, Universidad Complutense, Madrid.
- 1987: Doctor en Ciencias Matemáticas, Universidad Complutense, Madrid. Section: Statistics.

Work Experience

- 09/1982 - 09/1983: Instructor, Universidad Autónoma de Madrid.
- 10/1983 - 01/1985: Instructor, Universidad Nacional de Educación a Distancia.
- 02/1985 - 03/1988: Instructor, Universidad Complutense de Madrid.
- 04/1988 - 06/1991: Profesor Titular, Universidad Complutense.
- 07/1991 - 06/1998: Profesor Titular, Universidad Carlos III de Madrid.
- 07/1998 - -- : Catedrático, Universidad Carlos III de Madrid.

Courses

- **Undergraduate courses:** Applied Multivariate Statistics.
- **Graduate courses:** Regression Methods.

Research interests

- Discriminant Analysis and Classification Techniques.
- High Dimensional Data and Dimension Reduction Techniques.
- Goodness-of-Fit Tests in Time Series.
- Variable selection in linear regression.
- Applications of Statistics and Probability.

Publications

1. "Simultaneous obtention of multicollinearity and influential observations", 1988, *Estadística Española*, **30**, 83-98. (Spanish).
2. "An approximate characterization of influential cases in multicollinearity", 1988, *Trabajos de Estadística*, **3**, 81-96. (Spanish).
3. "A note on the behavior of augmented principal-component plots in regression", 1989, *Communications in Statistics-Theory and Methods*, **18**(1), 331-342.
4. "A graphical method of analysis of the hypothesis of normality", 1991, *Estadística Española*, **33**, 291-303. (Spanish).
5. "A result in optimal design with application in particle physics" (with R. Llosá). 1992. *Communications in Statistics-Theory and Methods*, **21**(1), 203-212.
6. "Influential observations in transformations: A Bayesian approach." 1992. *Communications in Statistics-Theory and Methods*, **21**(11), 3197-3209.
7. "Quantile-based estimation for the Box-Cox transformation in random samples." 1993. *Statistics and Probability Letters*, **16**, 137-145.
8. "A note on the multivariate Box-Cox transformation to normality." 1993. *Statistics and Probability Letters*, **17**, 259-263.
9. "On eigenvalues, case deletion and extremes in regression." 1993. *Computational Statistics and Data Analysis*, **16**, 299-309.
10. "A goodness-of-fit test for ARMA models based on the standardized sample spectral distribution of the residuals." 1994. *Journal of Time Series Analysis*, **15**, 637-647.
11. "A discriminant rule under transformation." (with J. A. Barrio), 1994. *Technometrics*, **36**, 348-353.
12. "Diagnostics and robust estimation in multivariate data transformations." 1995. *Journal of the American Statistical Association*, **90**, 945-951.
13. "A note on the behavior of regression plots." 1998. *Statistics and Probability Letters*, **37**, 269-278.
14. "Assessing the number of components in a general regression problem." 1998. *Journal of the American Statistical Association*, **93**, 1088-1098.
15. "On the bootstrap in misspecified regression models." 2001. *Computational Statistics and Data Analysis*, **36**, 227-242.

16. "On the consistency properties of linear and quadratic discriminant analyses," (with A. Hernández). 2005. *Journal of Multivariate Analysis*, **96**, 219-236.
17. "Dimension reduction in nonparametric kernel discriminant analysis," (with A. Hernández). 2005. *Journal of Computational and Graphical Statistics*, **14**, 847-866.
18. "A bootstrap method for assessing the dimension of a general regression problem," (with P. Barrios). 2007. *Statistics and Probability Letters*, **77**, 247-255.
19. "A goodness-of-fit process for $ARMA(p, q)$ models based on a modified residual autocorrelation sequence," (with A. Ubierna). 2007. *Journal of Statistical Planning and Inference*, **137**, 2903-2919.
20. "A method for dimension reduction in quadratic classification problems," 2008. *Journal of Computational and Graphical Statistics*, **17**(3), 572-589.
21. "On the structure of the quadratic subspace in discriminant analysis," 2010. *Journal of Multivariate Analysis*, **101**, 1239-1251.
22. "A note on the structure of the quadratic subspace in discriminant analysis," 2012. *Statistics and Probability Letters*, **82**, 739-747.
23. "On the behavior of the SAVE directions," 2014. *Communications in Statistics - Theory and Methods*. **43**(21), 4612-4627.
24. "A note on collinearity diagnostics and centering," 2018. *The American Statistician*. **72**(2), 140-146.
25. "A Goodness-of-Fit test for VARMA(p, q) models," 2018, (with H. Nguyen). *Journal of Statistical Planning and Inference*. **197**, 126-140.

Invited comments

1. Comment on "Robust Estimation," by Zamar, R.H, 1994. *Estadística Española*, **38**, 378-382.
2. Comment on "An adaptative estimation of dimension reduction space," by Xia, Y., Tong, H., LI, W. K., y Zhu, L-X, 2002. *Journal of the Royal Statistical Society, Series B*, **64**, 391.
3. Reply to Prof. Ronald Christensen on Velilla (2018), 2018. *The American Statistician*. **72**(1), 117-119.

Work in progress

1. "An application of sufficient dimension reduction in classification problems with functional data," 2018.
2. "Nonparametric detection of dimension reduction subspaces in regression," 2018 (in preparation).
3. "Projection pursuit versus central subspaces in nonparametric discriminant analysis," 2018 (in preparation).
4. "Bootstrapping for dimension assessment in a general regression problem," 2018 (in preparation).

Other works and publications

- “Contributions to the analysis of the multicollinearity and influence problems in linear regression.” Ph.D. Dissertation, 1988, Universidad Complutense de Madrid. (Spanish).

Advisor of Ph. D. Thesis

1. “Dimension reduction techniques in discriminant analysis”, November, 2000 (Spanish). Student: Adolfo Hernández.
2. “Bootstrap tests for dimension in a general regression problem”, September, 2001 (Spanish). Student: M^a Pilar Barrios.
3. “Goodness-of-fit tests in Time Series”, May, 2003 (Spanish). Student: Andrés Ubierna.
4. “Goodness-of-fit tests in multivariate time series”, April 2014. Student: Huong Nguyen.

Communications to Congresses

- “An Application of Location-Dispersion Orthogonality in Quadratic Discriminant Analysis”. Presented at the ASA meeting in Vancouver, CA. August 2010.
- “Detection of central dimension-reduction subspaces in regression”. Presented at the ASA meeting in Miami Beach, FL. August 2011.
- “Sufficient Dimension Reduction in Classification Problems with Functional Data”. Presented at the ASA meeting in Montreal, CA. August 2013.
- “A New Goodness-of-Fit Process for $VARMA(p, q)$ Models”. Presented at the ASA meeting in Boston, MA. August 2014.
- “A Note on Collinearity and Centering”. Presented at the ASA meeting in Seattle, WA. August 2015.
- “A Useful Scatterplot Matrix for Principal Component Analysis”. Presented at the ASA meeting in Seattle, WA. August 2017.

Seminars

- “Dimension reduction in nonparametric discriminant analysis.” Department of Statistics, UCLA. November, 2005.
- “Dimension reduction in quadratic discriminant analysis.” Department of Biostatistics, UCLA. April, 2006.

Visits to Foreign Institutions

- Department of Statistics, University of California at Los Angeles, Los Angeles, CA, October 2005/June 2006.

Activity as a reviewer

- Reviewer of papers in *Annals of the Institute of Statistical Mathematics*, *Biometrika*, *Computational Statistics and Data Analysis*, *Journal of Multivariate Analysis*, *Journal of Statistical Planning and Inference*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society, Series B*, *Journal of Time Series Econometrics*, *Mathematical Reviews*, *Technometrics*, *Test*, and *The American Statistician*.

Service

- Assistant Dean for Statistics, Universidad Carlos III de Madrid, 1994-2000, 2006-07.
- Head of the Department of Statistics and Econometrics, Universidad Carlos III de Madrid, 2000-04.

Membership

- Member of ASA and of IMS.

Languages

- English (fluent).