

# Gabriel Martos Venturini

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## EDUCATION

Ph.D. (*cum laude*) in Mathematical Engineering. University Carlos III de Madrid. June, 2015.  
Thesis: “Statistical Distances and Probability Metrics for Multivariate Data, Ensembles and Probability Distributions”. Advisor: Alberto Muñoz García.

M.Sc. Mathematical Engineering. University Carlos III de Madrid. November, 2011.  
Thesis: “Functional Data Analysis, Reproducing Kernel Hilbert Spaces and Information Geometry Methods for the Analysis of Time Series Data and Probability Measures”. Advisor: Alberto Muñoz García.

M.Sc. Applied Statistics. Alcalá University. July, 2007.

B.S. Economics. Universidad Nacional de Córdoba (Argentina). November, 2005 (GPA:7.3/10-top 5%).

## ACADEMIC EXPERIENCE

Post-doctoral Research Fellow, 2015–present.  
Pontificia Universidad Católica de Chile, Department of Statistics.

Doctoral Research Scholar and Teaching Assistant, 2009–2015.  
Carlos III de Madrid University, Department of Statistics.

Teaching Assistant, 2004–2006.  
Universidad Nacional de Córdoba, Faculty of Economics.

## PROFESSIONAL EXPERIENCE

Independent consultant and experienced advisor in data mining, statistics and analytical method in business, finance and industry. 2009 – present.

Providing technical consultancy for: ING Bank - Department of Business Intelligence and Market Risk Department (Spain). Abengoa Solar (Spain). Dirección General de Tráfico (DGT) de Madrid (Spain). Instituto para el Desarrollo Empresarial (INDEM), among others.

Consultant - Expert in Data Mining and Business Intelligence, 2007 – 2009.  
The Boston Consulting Group (Spain).

Economist and Public Policy Consultant, 2005–2006.  
Córdoba City Council: Economic Development Department (Argentina).

Economic and Investment Analyst, 2004.  
Internship at the Organization of American States (OAS - Córdoba, Argentina).

## RESEARCH

### *Research Lines*

Functional and high-dimensional data analysis in the context of statistical inference. Data Mining, Machine Learning and Statistical Computing with applications in Science, Technology and Economics.

### Refereed Journal Publications

A. Muñoz, J. Gonzalez and G. Martos (2016): “*Asymmetric latent semantic indexing for gene expression experiments visualization*”. Journal of Bioinformatics and Computational Biology (in press).

G. Martos, A. Muñoz and J. Gonzalez (2014): “*Generalizing Mahalanobis Distance via Density Kernels*”. Journal of Intelligent Data Analysis, vol 18, pp 19-31.

### Submitted Papers for Publication in Refereed Journal

A. Muñoz, G. Martos and J. Gonzalez: “*Non-parametric Distances for Ensembles and Statistical Distributions with Applications*”. Submitted to the Journal of Multivariate Analysis, September 2015 (in a second round of revisions).

### Refereed Conference Papers

G. Martos and A. Muñoz (2015): “*Local entropies for kernel selection and outlier detection in functional data*”. Lecture Notes in Computer Science, Springer (in press).

G. Martos, A. Muñoz and J. Gonzalez (2013): “*On the Generalization of the Mahalanobis Distance*”. Lecture Notes in Computer Science, Springer, pp. 125-132.

A. Muñoz, G. Martos and J. Gonzalez (2013): “*A New Distance for Data Sets in a Reproducing Kernel Hilbert Space Context*”. Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications, Springer, pp 222-229.

A. Muñoz, G. Martos and J. Gonzalez (2012): “*A new distance for probability measures based on the estimation of level sets*”. Artificial Neural Networks and Machine Learning (ICANN), Springer, vol. part II, pp. 271-278.

### Papers in Progress

“*Functional Bregman divergences for localized brain asymmetry analysis*”. With Miguel De Carvalho (Pontificia Universidad Católica de Chile, Department of Statistics).

“*A Flexible and Affine Invariant k-means Clustering Procedure*”. With Laura Sangalli (Politecnico di Milano, Department of Mathematics).

“*Kernel Methods for content analysis: a case study in CEOs letters to shareholders*”. With Alberto Muñoz and Encarna Guillamón Saorín (Carlos III de Madrid, Department of Statistics and Department of Business and Economics respectively).

“*Distances in Statistical Manifolds: Geodesic paths on the density variety*”. With Alberto Muñoz (Carlos III de Madrid, Department of Statistics).

### Conference and Seminar Presentations

$XX^{th}$  Iberoamerican Congress on Pattern Recognition: “*Local entropies for kernel selection and outlier detection in functional data*”. Montevideo, Uruguay, 2015.

2<sup>nd</sup> Conference in Business Analytics in Finance and Industry “*New Kernel metrics for content analysis in Finance and Accounting: a case study in CEO’s letters to shareholders*”. Santiago, 2015.

The International Federation of Classification Societies: “*Distance measures based on the probabilistic information of the data with applications in classification problems*”. Italy, 2015.

18<sup>th</sup> Iberoamerican Congress on Pattern Recognition: “*On the Generalization of the Mahalanobis Distance*”. La Havana, Cuba, 2013.

MOX Politecnico di Milano: “*A new distance for Data Sets (and Probability Measures) in a RKHS context*”. Milano, Italy, 2013.

Universidad Carlos III de Madrid: “*Nonparametric Distances for Ensembles and Statistical Distributions with Applications*”. Madrid, Spain, 2013.

### *Doctoral stay*

MOX Politecnico di Milano (Department of Mathematics), Milano, Italy, Sep-Dec 2013.

Supervisor: Laura Sangalli (head of the group in Functional Data at Politecnico di Milano).

## TEACHING

### *Pontificia Universidad Católica de Chile (2016-.)*

Financial Mathematics (T.A. Ms.S. in Actuarial Science).

### *Carlos III de Madrid University (2009-2015)*

Quantitative Methods in Management. MBA program. Lecturer.

Quantitative Methods in Finance. Master in Finance. Lecturer.

Statistical Methods in Data Mining (Bachelor). Statistics and Business. Lecturer.

Research Techniques (Bachelor). Statistics and Business. Lecturer.

Probability and Inference (Bachelor). Industrial, Aerospace and Mechanical Engineering. Lecturer.

Functional Data Analysis (T.A. Ph.D. course). M.Sc. Mathematical Engineering.

Generalized Linear Model (T.A. Ph.D. course). M.Sc. Mathematical Engineering.

### *Universidad Complutense de Madrid (2014-2015)*

Linear Algebra and its Applications in Engineering. Institute of European Studies. Lecturer.

### *Universidad Nacional de Córdoba (2002-2004)*

Statistics (Bachelor). T.A. in the B.A. in Economics.

### *Other Institutions (2003-2004)*

Microeconomics (Bachelor). Lecturer. Academia Universitaria Riesgo Cero (Córdoba, Argentina).

## GRANTS and AWARDS

Scholarship for doctoral studies (PIF). Universidad Carlos III de Madrid, 2011-2015.

Doctoral stay grant (PPI). Universidad Carlos III de Madrid, 2013.

Scholarship for postgraduate studies. Universidad Carlos III de Madrid, 2009-2011.

Scholarship for postgraduate studies. Fundación Carolina, 2006-2007.

## SERVICES

Responsible for the organization and coordination of the seminars in the Department of Statistics, Faculty of Mathematics at the Pontificia Universidad Católica de Chile.

Reviewer for the Annals of Applied Statistics.

Reviewer for the proceedings at the conference: Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications.

Coordinator for several courses in Probability and Statistics, at the Universidad Carlos III de Madrid (2009-2015).

## OTHER SKILLS

*Programming Languages:* R, Python, Matlab, Mathematica, SAS, Clementine, Visual, C++, SQL, L<sup>A</sup>T<sub>E</sub>X, html. Econometric software: Stata, Eviews, TS, SPSS, among others.

*Languages:* Spanish (native) and English (fluent).

*Soft skills:* Ability to work under pressure, adaptability, creative thinking, self-motivated.

## ACADEMIC REFERENCES

Alberto Muñoz, Department of Statistics. University Carlos III de Madrid (PhD Advisor).  
email:alberto.munoz@uc3m.es

Javier Gonzalez, Sheffield Institute for Translational Neuroscience. The University of Sheffield.  
email: j.h.gonzalez@sheffield.ac.uk

Miguel de Carvalho, Department of Statistics. Pontificia Universidad Católica de Chile.  
email: mdecarvalho@mat.puc.cl

Laura Sangalli, Department of Mathematics, Politecnico di Milano.  
email:laura.sangalli@polimi.it