Departamento de Matemática
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# Felipe Osorio

## Research Interests

- Sensitivity analysis and Influence diagnostics
- Mixed-effect models and Longitudinal data

## Education

2006 **D. Sc. in Statistics**, *Universidade de São Paulo*, Brazil.
Thesis topic: *Diagnóstico de Influência em Modelos Elípticos com Efeitos Mistos*.
Advisor: Professor Gilberto A. Paula.

2001 **Engineer in Statistics**, *Universidad de Valparaíso*, Chile.
Topic: *Detección de Puntos de Cambio en Modelos de Regresión Lineal $t$-independiente*.
Advisor: Professor Manuel Galea.

## Academic Experience

08/17-present **Lecturer**, *Departamento de Matemática*, Universidad Técnica Federico Santa María.

03/15-07/17 **Research Associate**, *Instituto de Estadística*, Pontificia Universidad Católica de Valparaíso.

09/11-02/15 **Researcher**, *Departamento de Matemática*, Universidad Técnica Federico Santa María.

01/07-08/11 **Assistant Professor**, *Departamento de Estadística*, Universidad de Valparaíso.

## Publications

*2 cites* Acosta, J., **Osorio, F.**, Vallejos, R. (2016). Effective sample size for line transect sampling models with an application to marine macroalgae. *Journal of Agricultural, Biological, and Environmental Statistics* **21** (3), 407-425.

Acevedo, C.A., Tomic, G., Santander, R. Creixell, W., **Osorio, F.**, Sánchez, E. (2016). A Chemometrics approach to analysis volatile molecules released by post-mortem bovine fast-twitch muscles. *CyTA - Journal of Food* **14** (3), 399-404.

*1 cite* **Osorio, F.** (2016). Influence diagnostics for robust P-splines using scale mixture of normal distributions. *Annals of the Institute of Statistical Mathematics* **68** (3), 589-619.

*3 cites* Vallejos, R., **Osorio, F.**, Mancilla, D. (2015). The codispersion map: a graphical tool to visualize the association between two spatial variables. *Statistica Neerlandica* **69** (3), 298-314.

*5 cites* Vallejos, R., **Osorio, F.** (2014). Effective sample size of spatial process models. *Spatial Statistics* **9**, 66-92.

*25 cites* Meza, C., **Osorio, F.**, De la Cruz, R. (2012). Estimation in nonlinear mixed-effects models using heavy-tailed distributions. *Statistics and Computing* **22** (1), 121-139.

*18 cites* **Osorio, F.**, Paula, G.A., Galea, M. (2009). On estimation and influence diagnostics for the Grubbs' model under heavy-tailed distributions. *Computational Statistics & Data Analysis* **53** (4), 1249-1263

Cademartori, D., Navia, R., Galea, M., **Osorio, F.** (2008). Prediction of the economic activity from the short and long-term interest rate differential: New evidences in Chile and the United States of America cases. *Applied Economics Letters* **15** (9), 707-712.

*59 cites* **Osorio, F.**, Paula, G.A., Galea, M. (2007). Assessment of local influence in elliptical linear models with longitudinal structure. *Computational Statistics & Data Analysis* **51** (9), 4354-4368.

*13 cites* **Osorio, F.**, Galea, M. (2006). Detection of a change-point in Student-$t$ linear regression models. *Statistical Papers* **47** (1), 31-38.

### Book in Preparation

Vallejos, R., **Osorio, F.**, Bevilacqua, M. (2018+). *Spatial Relationships Between Two Georeferenced Variables: With Applications in R*. To appear in Springer.

### Unpublished Manuscripts

Vallejos, R., **Osorio, F.**, Cuevas, F. (2016). SpatialPack: Computing the association between two spatial processes.

## Conference Proceedings

**Osorio, F.** (2011). Smoothing parameter selection and outliers accommodation for smoothing splines. In: *Proceedings of the 58th World Statistics Congress of the International Statistical Institute*, Dublin, Ireland. Session CPS008, 6037-6042.

De la Cruz, R., Eyheramendy, S., Meza, C., **Osorio, F.** (2010). Exact estimation procedures in a spatial mixed-effects probit model with binary outcomes. In: *Joint Statistical Meetings Proceedings*, Statistical Computing Section. Alexandria, VA: American Statistical Association. 3629-3637.

## Software

*5 cites* **Osorio, F.** (2017). *heavy: Robust estimation using heavy-tailed distributions*.
R package version 0.38.1 URL: `CRAN.R-project.org/package=heavy`

**Osorio, F.**, Wołodźko, T. (2017). *L1pack: Routines for L1 estimation*.
R package version 0.38. URL: `CRAN.R-project.org/package=L1pack`

**Osorio, F.** (2015). *MVT: Estimation and testing for the multivariate t-distribution*.
R package version 0.3. URL: `CRAN.R-project.org/package=MVT`

*12 cites* **Osorio, F.**, Vallejos, R. (2014). *SpatialPack: Package for analysis of spatial data*.
R package version 0.2-3. URL: `CRAN.R-project.org/package=SpatialPack`

## Grants

2017   Co-investigator DI project Investigación Innovadora Interdisciplinaria (PUCV)
*Inteligencia artificial para el monitoreo de la estabilidad de depósitos de relaves*.
with Dr. Gabriel Villavicencio (PUCV) and collaborators.

2014,2015   Principal Investigator UTFSM grant 12.14.14.
*Influencia local y análisis de residuos para funciones de inferencia cuadráticas*.

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| 2014,2015 | Co-investigator DIUBB grant 141108 3/R<br>*Comparación de las propiedades de los estimadores de regresión ridge y mínimos cuadrados parciales mediante simulaciones.* with Dr. Luis Firinguetti (UBB). |
| 2014-2017 | Principal Investigator FONDECYT grant 1140580<br>*Influence diagnostics and residual analysis in inference functions with applications to longitudinal data.* |
| 2012,2013 | Co-investigator UTFSM grant 12.12.05.<br>*Criterios de información y diagnóstico en modelos de regresión espacial.*<br>with Dr. Ronny Vallejos (USM). |
| 2011-2014 | Associate Researcher CONICYT grant 791100007.<br>*Fortalecimiento del Área Estadística en el Departamento de Matemática de la USM.*<br>Coordinator: Dr. Ronny Vallejos (USM). |
| 2010,2011 | Principal Investigator DIPUV grant 05/2009.<br>*Acomodación de outliers y diagnóstico de influencia en regresión semiparamétrica.* |
| 2009-2011 | Co-Investigator PROSUL grant 490429/2008-4, CNPq-Brazil<br>*Desenvolvimento de métodos de diagnóstico e teoria assintótica em modelos de regressão.*<br>with Dr. Francisco Cysneiros (UFPE) and collaborators. |
| 2008-2010 | Co-Investigator DIPUV grant 05/2007<br>*Métodos de estimación en modelos con efectos mixtos para datos no normales.*<br>with Dr. Cristian Meza (UV). |
| 2007-2010 | Principal Investigator FONDECYT grant 11075071<br>*Robust estimation and influence diagnostics in mixed-effect models.* |
| 2006-2008 | Co-Investigator CNPq-Brazil 471296/2006-6<br>*Diagnóstico de influência em modelos de regressão de contornos elípticos.*<br>with Dr. Gilberto A. Paula (USP) and collaborators. |

## Students

### Doctoral

| | |
|---|---|
| 2017 | Jonathan Acosta, Doctor in Mathematics at UTFSM (co-advisor Dr. R. Vallejos). |

### Master

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|---|---|
| 2017 | Paula Guerrero, Master in Statistics at PUCV. |
| 2016 | Jessenia Cortés, Master in Statistics at PUCV. |
| 2013 | Francisco Cuevas, Master in Mathematics at UTFSM (co-advisor Dr. R. Vallejos). |
| 2012 | Francisco Contreras, Master in Statistics at UV (co-advisor Dr. C. Meza). |
| 2012 | Rubén Miranda, Master in Statistics at UV. |
| 2011 | Patricio Maturana, Master in Statistics at UV. |
| 2011 | Marcelo Torres, Master in Statistics at UV (co-advisor Dr. M. Galea). |
| 2009 | Patricio Videla, Master in Statistics at PUCV. |

### Undergraduate

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| 09/17-present | Marcela Miranda, Mathematical Engineer at UTFSM (co-advisor F. Cuevas). |
| 03/17-present | Eileen Labalobich, Bachelor of Science in Statistics at PUCV. |
| 03/16-present | Alonso Ogueda, Mathematical Engineer at UTFSM (co-advisor Dr. R. Vallejos). |

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| 03/16-present | Fernando Salazar, Bachelor of Science in Statistics at PUCV. |
| 2017 | Diego Estay, Bachelor of Science in Statistics at PUCV. |
| 2016 | Carlos Schwarzenberg, Mathematical Engineer at UTFSM. |
| 2015 | Jessica García, Bachelor of Science in Statistics at PUCV. |
| 2015 | Agustín Uribe, Mathematical Engineer at UTFSM. |
| 2014 | Claudio Henríquez, Mathematical Engineer at UTFSM. |
| 2013 | Jonathan Acosta, Mathematical Engineer at UTFSM (co-advisor Dr. R. Vallejos). |
| 2012 | Denisse Suarez, Engineer in Statistics at UV. |
| 2012 | Rodrigo Toledo, Engineer in Statistics at UV. |
| 2012 | Natalia Vargas, Engineer in Statistics at UV. |
| 2009 | Orlando Cataldo, Engineer in Statistics at UV. |
| 2009 | Joel Herrera, Engineer in Statistics at UV. |

## Awards and Scholarchips

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| 2003-2006 | Doctoral Scholarchip, MIDEPLAN-Chile<br>Granted by the National Scholarship Program of Chile. |
| 2001-2003 | Doctoral Scholarchip, CNPq-Brazil<br>Granted by the National Council of Scientific Research CNPq (process #141926/2001-5) join the Department of Mathematics and Statistics. University of São Paulo, Brazil. |
| 2001 | Prize *"Universidad de Valparaíso"*<br>Best undergraduate student. Engineering program in Statistics. University of Valparaíso, Chile. |

## Editorial Service

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| 04/16-present | Managing Editor for the Chilean Journal of Statistics. |

### Reviewed articles for:

- Brazilian Journal of Probability and Statistics
- Chilean Journal of Statistics
- Colombian Journal of Statistics
- Communications in Statistics: Theor. & Meth.
- Computational Statistics & Data Analysis
- Hacettepe Journal of Mathematics and Statistics
- J. Agricultural, Biological, Environmental Stat.
- Journal of Applied Statistics
- J. Statistical Computation and Simulation
- Pakistan Journal of Statistics
- Statistical Methodology
- Stoch. Environ. Research and Risk Assessment
- TEST

### Funding:

- Chilean National Institute of Science and Technology (CONICYT)

Valparaíso, September 3, 2017