Victor Gallego

Predoctoral Researcher & Ph.D. Student
Institute of Mathematical Sciences (ICMAT)
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Education

PhD in Mathematical Eng., Statistics and OR, ICMAT and Universidad Complutense, Madrid	2017–
M.S. in Mathematical Engineering, Universidad Complutense, Madrid	2016–2017
Double Degree in Mathematics and Computer Science, UCM, Madrid	2011–2016

Relevant experience

Visiting Research Scholar at Duke University and SAMSI, under the supervision of Prof. David Banks, in the context of the two thematic programs Games and Decisions in Reliability and Risk and Deep Learning.	Aug. 2019 –
Predoctoral Researcher at SPOR/Datalab group at ICMAT (CSIC). Working on Bayesian ML, adversarial ML and related industrial projects, under the supervision of David Ríos Insua (ICMAT, Royal Academy of Sciences) and David Gómez-Ullate (ICMAT, UCA)	Oct. 2017 –
Industrial Project. I developed a neural classifier for the task of classifying a corpus of legal judgments using Pytorch, in the context of an industrial project with Lefebvre-El Derecho, specialized in Judicial Intelligence. Code available: `https://github.com/vicgalle/neural-classifier`.	Dec. 2017-Mar. 2018
Research Grant at SPOR/Datalab group at ICMAT (CSIC), supervised by Prof. David Gómez-Ullate. I worked in projects related to Data Science and Machine Learning, concretely, I implemented several dynamic linear models (DLM) to predict econometric variables and evaluate the impact of marketing campaigns, in the context of an **industrial project** with Omnicom Media Group.	Sep. 2016 - Aug. 2017
Collaboration Grant under the supervision of Prof. Valeri Makarov. I worked within the CogNeuBotics group at the Applied Maths Department, UCM, implementing mathematical models of cognition for robotic systems.	Sep. 2015 - Jun. 2016

Awarded grants

FPU Grant for predoctoral research, Ministry of Science	2017
Research grant Severo Ochoa Master, Institute of Mathematical Sciences, CSIC	2016
Excellence grant awarded to top performing students (4 times), Community of Madrid	2012–2015

Publications

PEER-REVIEWED ARTICLES

1. V. Gallego and D. R. Insua. Variationally inferred sampling through a refined bound. In *Advances in Approximate Bayesian Inference (AABI)*, 2019.
2. V. Gallego and D. R. Insua. Stochastic gradient mcmc with repulsive forces. In *Bayesian Deep Learning Workshop, Neural Information and Processing Systems (NIPS)*, 2018.
3. V. Gallego, R. Naveiro, and D. R. Insua. Reinforcement learning under threats. In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 33, 2019.

4. V. Gallego, P. Suárez-García, P. Angulo, and D. Gómez-Ullate. Assessing the effect of advertising expenditures upon sales: A bayesian structural time series model. *Applied Stochastic Models in Business and Industry*, 35(3):479–491, 2019.
5. P. Angulo, V. Gallego, D. Gómez-Ullate, and P. Suárez-García. Bayesian factorization machines for risk management and robust decision making. In *Mathematical and Statistical Methods for Actuarial Sciences and Finance*, pages 51–55. Springer, 2018.
6. C. Calvo, J. A. Villacorta-Atienza, V. Mironov, V. Gallego, and V. A. Makarov. Waves in isotropic totalistic cellular automata: Application to real-time robot navigation. *Advances in Complex Systems*, 19(04n05):1650012, 2016.
7. C. Calvo, V. Gallego, A. Selskii, and V. A. Makarov. Learning connectivity structure in a chain of network motifs. *Advanced Science Letters*, 22(10):2647–2651, 2016.
8. V. A. Makarov, C. Calvo, V. Gallego, and A. Selskii. Synchronization of heteroclinic circuits through learning in chains of neural motifs. *IFAC-PapersOnLine*, 49(14):80–83, 2016.

PREPRINTS

1. Adversarial machine learning: Perspectives from adversarial risk analysis. *(in preparation)*, 2019.
2. V. Gallego, R. Naveiro, D. R. Insua, and D. G.-U. Oteiza. Opponent aware reinforcement learning. *arXiv preprint arXiv:1908.08773*, 2019.

Talks and Tutorials

1. *Variationally Inferred Sampling for Probabilistic Programs* – Bayesian Inference in Stochastic Processes (BISP 2019). June 2019. Slides: `https://vicgalle.github.io/slides_vis/vis.html`
2. *Markov Decision Processes Under Threats* – Advances in Decision Analysis (ADA 2019). June 2019. Slides: `https://vicgalle.github.io/static/RL_presentation___ADA__.pdf`
3. **Tutorial** on *Adversarial Machine Learning*. Recent Developments in Machine Learning – Ortega-Marañón Foundation. September 2018. Code for the tutorial: `https://github.com/vicgalle/fom-tutorial`.
4. *From state-space models to Bayesian structural time series: assessing the effect of advertising expenditures upon sales* – BYMAT 2018. ICMAT. May 2018. Slides: `https://goo.gl/ggf1CT`
5. *Robust budget optimization under uncertainty in the media industry* – 5th Symposium on Games and Decisions in Reliability and Risk. Real Academia de las Ciencias. June 2017.
6. *Robust budget optimization and forecasting under uncertainty in the media industry* – 1st Spanish Young Statisticians and Operational Researchers Meeting (SYSORM). University of Granada. November 2017.
7. *La sociedad del Big Data: ¿hacia un mundo mejor?* (*Big Data society: towards a better world?*) – UAM. Madrid. September 2017 (jointly with D. Gómez-Ullate, R. Naveiro, S. Rodríguez, A. Redondo).

Teaching

1. Teaching Fellow | Universidad Complutense, Madrid 2018–2019
   Stochastic Processes (30h, fifth year of double degree in Maths & Econ.)
2. Instructor | Instituto Nacional de Estadística (National Statistics Institute), Madrid 2019
   Machine Learning with R (15h)
3. Instuctor | Dirección General de Ordenación del Juego (Spanish Ministry of Finance), Madrid 2017
   Intro to Python and Machine Learning (10h)
4. Teaching Assistant | Universidad Complutense, Madrid 2015
   Basic Maths (first year of double degree in Maths & Econ.)

Summer Schools

Machine Learning Summer School (MLSS Madrid 2018), DeepLearn (Genova 2018).

Professional service

JOURNAL REVIEWING

Risk Analysis 2019–
Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales (Journal of the Royal Academy of Exact, Natural and Physical Sciences). Serie A. Math 2019–

SCIENTIFIC COMMITTEE

BYMAT 2019: Bringing Young Mathematicians Together 2019

WORKSHOP ORGANIZATION

BISP11: Bayesian Inference in Stochastic Processes 2019

Technical skills

LANGUAGES: Python, R, C++, C, Java, Haskell, MATLAB, SQL.
FRAMEWORKS: pytorch, tensorflow, scikit-learn, numpy.
SYSTEMS: GNU/Linux, macOS; slurm, Sun Grid Engine (high-performance computing)
GITHUB: `https://github.com/vicgalle`