

# Javier Zazo

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## SUMMARY

I am a postdoctoral fellow at Harvard University, working on computational machine learning and representation learning. My area of expertise expands optimization, probabilistic models, deep learning, and reinforcement learning. I have experience working on a variety of projects including computational creativity, non-convex optimization, distributed algorithms, smart grids, and communication systems. I am currently seeking professional opportunities as a data scientist, where I can propose solutions to modeling problems.

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## EDUCATION

- **Technical University of Madrid** Madrid, Spain  
*Doctor of Philosophy (Excellent Cum Laude)* *Sep. 2012 – Jul. 2017*
- **National University of Ireland** Maynooth, Ireland  
*Master of Science (Research)* *Sep. 2011 – Sep. 2012*
- **Technical University of Darmstadt** Darmstadt, Germany  
*Master of Science in Communication and Information Technologies* *Sep. 2008 – May 2010*
- **Technical University of Madrid** Madrid, Spain  
*Telecommunications Engineer Degree* *Sep. 2004 – May 2010*

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## WORK EXPERIENCE

- **Harvard University** Cambridge, MA  
*Postdoctoral Fellow* *Apr. 2018 – Present*
  - **Flavor & Fragrance Creativity:** We model the space of recipes to aid in the creation processes of new products. Role: modeling, implementation. Project conducted in joint collaboration with **IBM**.
  - **Visual Neurological Model:** Probabilistic modeling of recorded neurological responses of salamanders when presented with natural images. Project in collaboration with **UCL** and **Göttingen University**.
- **Technical University of Madrid** Madrid, Spain  
*Graduate Research Assistant* *Sep. 2012 – Jul. 2017*
  - **Non-convex Optimization:** Algorithms and optimality. Smartgrids and self-localization.
  - **Dynamic Potential Games:** Optimal policies in multiagent systems using reinforcement learning.
  - **Underwater Communications:** Wireless underwater sensor network, leading to a real deployment in the ocean. Collaboration: University Palmas G.Canaria and Oceanic Platform of the Canary Islands.
- **University at Buffalo** Buffalo, NY  
*Visiting Researcher* *Sep. 2014 – Jan. 2015*
  - **Big Data Optimization:** Research on optimization techniques for big data problems and high dimensional spaces. Development of flexible methods for multiagent, distributed, stochastic and parallel systems.
- **EU-Japan Centre for Industrial Cooperation** Tokyo, Japan  
*Internship in Japan: Vulcanus* *Sep. 2010 – Apr. 2011*
  - **Internship at TÜV Rheinland:** Competitive fellowship with 3% acceptance rate. Competencies: EMC and radio certification of technological equipment and standarization.

## LEADERSHIP PROJECTS

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- **Advanced Data Science (2018 – 2019):** Instructor with focus on: supervised and unsupervised learning, statistical modeling, deep neural networks and Bayesian methods (80 students, 2 semesters).
- **Introduction to ML and Computational Statistics (2019):** Visiting lecturer for new course offered by the African Center of Excellence at University of Rwanda (50 students, 2 weeks).
- **Capstone Project with Spotify (2019):** Development of an offline recommender system using batch RL.
- **Capstone Project with Google Brain (2019):** Performance of CNN architectures vs. Neural Architecture Search (differentiable methods) on scientific datasets.
- **Technology Factsheet: Internet of Things:** Belfer Center, Harvard Kennedy School.

## SELECTED JOURNAL PUBLICATIONS

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4 published journal publications, 3 in preparation, 5 of them as first author.

- Data Analytics for Creative Processes: Designing the Next Delicious Product (2019), J. Zazo, F. Calmon, A. Calmon, R. Goodwin, *Management Science* [submitted].
- Strong duality in nonconvex quadratic problems with non-overlapping quadratic constraints [in preparation].
- Robust worst-case analysis of demand-side management in smart grids (2016), J. Zazo, S. Zazo, SV. Macua, *IEEE Transactions on Smart Grid* 8 (2), 662-673.
- Dynamic potential games with constraints: Fundamentals and applications in communications (2016), S. Zazo, SV. Macua, M. Snchez-Fernndez, J. Zazo, *IEEE Transactions on Signal Processing* 64 (14), 3806-3821.

## SELECTED CONFERENCE PUBLICATIONS

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11 published conferences, 3 workshop contributions.

- Convolutional Dictionary Learning in Hierarchical Networks (2019), J. Zazo, B. Tolooshams, D. Ba, *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*.
- Learning Parametric Closed-Loop Policies for Markov Potential Games (2018), SV. Macua, J. Zazo, S. Zazo, *International Conference on Learning Representations (ICLR)*.
- Non-monotone quadratic potential games with single quadratic constraints (2016), J. Zazo, SV. Macua, S. Zazo, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.
- Distributed cognitive radio systems with temperature-interference constraints and overlay scheme (2016), J. Zazo, SV. Macua, S. Zazo, *European Signal Processing Conference (EUSIPCO)*.

## OTHER SKILLS AND INTERESTS

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- **Programming:** Python, Julia, MATLAB, L<sup>A</sup>T<sub>E</sub>X, C, Java.
- **Data Science:** Pytorch, TensorFlow, SciKit-Learn, DataFrames; Cvxpy, JuMP, Gurobi, Mosek, etc
- **Languages:** Spanish (native), English (proficient), German (advanced), Japanese (basic).
- **Bachelor in Business Studies:** University of Distant Education (Spain), 1 year completed.
- **Scholarships:** Harvard Postdoctoral Fellowship, FPU Doctoral Grant, Nvidia GPU, Vulcanus Fellowship.
- **Interests:** Yoga (healthy mind & body), nature lover (400 km treks), Go player (10x tournaments).
- **Soft Skills:** Proactive, Collaborative, Innovative, Flexible, Mentor.
- **Contact Reference::** Flavio du Pin Calmon, <http://people.seas.harvard.edu/flavio/>.