

# Francisco J. R. Ruiz

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## Academic Employment

- 2016 (Oct) - Present **Postdoctoral Researcher (Marie Skłodowska-Curie Fellow)**, *Columbia University (New York, USA) and University of Cambridge (Cambridge, UK)*.  
Advanced probabilistic modeling and Machine learning  
Supervisors: David M. Blei and Zoubin Ghahramani
- 2015 - 2016 **Postdoctoral Research Scientist**, *Columbia University in the City of New York*.  
Advanced probabilistic modeling and Machine learning  
Supervisor: David M. Blei.

## Academics

- 2012 - 2015 **PhD. in Machine Learning**, *University Carlos III in Madrid (Spain)*.  
Advisor: Fernando Perez-Cruz.  
2013 (Sep-Nov): Visiting Student Researcher. Princeton University (Supervisor: David M. Blei).  
2014 (Jun-Aug): Visiting Student Researcher. University of Sheffield (Supervisor: Neil Lawrence).
- 2010 - 2012 **MSc. in Multimedia and Communications (Machine Learning and Signal Processing)**, *University Carlos III in Madrid (Spain)*, Best Student Award (1/20).
- 2005 - 2010 **Electrical Engineering (Signal Processing and Communications)**, *University of Seville (Spain)*, GPA: 3.45/4. National Best Student Award (#1 in Electrical Engineering in Spain).

## Articles in Refereed Journals

### Accepted

- 2017 M. Fatemi, K. Granstrom, L. Svensson, F. J. R. Ruiz, L. Hammarstrand, *Poisson multi-Bernoulli radar mapping using Gibbs sampling*, IEEE Transactions on Signal Processing.
- 2016 M. F. Pradier, F. J. R. Ruiz, F. Perez-Cruz, *Prior design for dependent Dirichlet processes: An application to marathon modeling*, PlosONE.
- 2015 I. Valera, F. J. R. Ruiz, F. Perez-Cruz, *Infinite factorial unbounded-state hidden Markov model*, IEEE Transaction on Pattern Analysis and Machine Intelligence.
- 2015 I. Valera, F. J. R. Ruiz, P. Olmos, C. Blanco, F. Perez-Cruz, *Infinite Continuous Feature Model for Psychiatric Comorbidity Analysis*, Neural Computation.
- 2015 F. J. R. Ruiz, F. Perez-Cruz, *A Generative Model for Predicting Outcomes in College Basketball*, Journal of Quantitative Analysis of Sports (Special Issue: Prediction methodology for the NCAA men's basketball tournament).
- 2014 F. J. R. Ruiz, I. Valera, C. Blanco, F. Perez-Cruz, *Bayesian nonparametric comorbidity analysis of psychiatric disorders*, Journal of Machine Learning Research.

### Submitted

- 2017 F. J. R. Ruiz, I. Valera, L. Svensson, F. Perez-Cruz, *Infinite Factorial Finite State Machine for Blind Multiuser Channel Estimation*, IEEE Transactions on Cognitive Communications and Networking. Under review.

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## Conferences

- 2017 M. Rudolph, F. J. R. Ruiz, S. Athey, D. M. Blei, *Structured embedding models for grouped data*, Advances in Neural Information Processing Systems (NIPS). Long Beach (CA, USA).
- 2017 L. Liu, F. J. R. Ruiz, S. Athey, D. M. Blei, *Context selection for embedding models*, Advances in Neural Information Processing Systems (NIPS). Long Beach (CA, USA).
- 2017 C. Naesseth, F. J. R. Ruiz, S. Linderman, D. M. Blei, *Reparameterization gradients through acceptance-rejection sampling algorithms*, Artificial Intelligence and Statistics (AISTATS). Best paper award. Oral presentation. Fort Lauderdale (USA).
- 2016 D. Tran, F. J. R. Ruiz, S. Athey, D. M. Blei, *Model Criticism for Bayesian causal inference*, ArXiv preprint.
- 2016 F. J. R. Ruiz, M. K. Titsias, D. M. Blei, *The generalized reparameterization gradient*, Advances in Neural Information Processing Systems (NIPS). Barcelona (Spain).
- 2016 M. Rudolph, F. J. R. Ruiz, S. Mandt, D. M. Blei, *Exponential family embeddings*, Advances in Neural Information Processing Systems (NIPS). Barcelona (Spain).
- 2016 F. J. R. Ruiz, M. K. Titsias, D. M. Blei, *Overdispersed black-box variational inference*, Uncertainty in Artificial Intelligence (UAI). Jersey City (USA).
- 2015 I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz, *Infinite factorial dynamical model*, Advances in Neural Information Processing Systems (NIPS). Montreal (Canada).
- 2015 I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz, *A Bayesian nonparametric approach for blind multiuser channel estimation*, European Signal Processing Conference (EUSIPCO). Invited contribution. Nice (France).
- 2014 P. Gopalan, F. J. R. Ruiz, R. Ranganath, D. M. Blei, *Bayesian nonparametric Poisson factorization for recommendation systems*, Artificial Intelligence and Statistics (AISTATS). Reykjavik (Iceland).
- 2012 F. J. R. Ruiz, I. Valera, C. Blanco, F. Perez-Cruz, *Bayesian nonparametric modeling of suicide attempts*, Advances in Neural Information Processing Systems 25 (NIPS). Spotlight session. Lake Tahoe (USA).
- 2010 L. Romero Cortés, F. J. Rodríguez Ruiz, S. Martín López, M. Alcón Camas, M. González Herráez, P. Corredera Guillén, J. D. Ania Castañón, *Sensado distribuido Brillouin en un láser ultralargo (Brillouin distributed sensing in an ultralong laser)*, XXV National Symposium of International Union of Radio Science (URSI), Bilbao (Spain).

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## Workshops

- 2017 (Dec) F. J. R. Ruiz, M. Titsias, D. M. Blei, *Scalable large-scale classification with latent variable augmentation*, NIPS Workshop on Approximate Bayesian Inference. Long Beach (CA, USA).
- 2017 (Mar) F. J. R. Ruiz, S. Athey, D. M. Blei, *Item embeddings for demand estimation in economics*, 11th Annual Machine Learning Symposium at the New York Academy of Sciences (USA). IBM best poster presenter award (5th place).
- 2017 (Mar) C. Naesseth, F. J. R. Ruiz, S. Linderman, D. M. Blei, *Reparameterization gradients through acceptance-rejection sampling algorithms*, 11th Annual Machine Learning Symposium at the New York Academy of Sciences (USA).
- 2016 (Dec) C. Naesseth, F. J. R. Ruiz, S. Linderman, D. M. Blei, *Rejection Sampling Variational Inference*, NIPS Workshop on Approximate Bayesian Inference. Barcelona (Spain).
- 2016 (Mar) I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz, *Infinite factorial dynamical model*, 10th Annual Machine Learning Symposium at the New York Academy of Sciences (USA).
- 2014 (Dec) F. J. R. Ruiz, N. D. Lawrence, J. Hensman, *True natural gradient of collapsed variational Bayes*, NIPS Workshop on Advances in Variational Inference. Montreal (Canada).

- 2014 (Dec) M. F. Pradier, P. G. Moreno, F. J. R. Ruiz, I. Valera, H. Molina-Bulla, F. Perez-Cruz, *Map/Reduce uncollapsed Gibbs sampling for Bayesian non parametric models*, NIPS Workshop on Software Engineering for Machine Learning. Montreal (Canada).
- 2014 (May) I. Valera, F. J. R. Ruiz, F. Perez-Cruz, *Infinite Factorial Unbounded Hidden Markov Model for Blind Multiuser Channel Estimation*, 4th International Workshop on Cognitive Information Processing (CIP). Copenhagen (Denmark).
- 2013 (Dec) P. Gopalan, F. J. R. Ruiz, R. Ranganath, D. M. Blei, *Bayesian nonparametric Poisson factorization for recommendation systems*, NIPS Workshop on Probabilistic Models for Big Data. Lake Tahoe (USA).
- 2013 (Dec) I. Valera, F. J. R. Ruiz, P. M. Olmos, C. Blanco, F. Perez-Cruz, *Infinite continuous feature model for psychiatric comorbidity analysis*, NIPS Workshop on Machine Learning for Clinical Data Analysis and Healthcare. Lake Tahoe (USA).
- 2011 (Oct) F. J. R. Ruiz, F. Perez-Cruz, *Zero-error codes for the noisy-typewriter channel*, 2011 IEEE Information Theory Workshop (ITW), Paraty (Brazil).

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## Awards

- 2016 - 2019 **Marie Skłodowska-Curie Global Fellowship**, *Probabilistic Modeling of Electronic Health Records*, by the European Commission (H2020). Prestigious European fellowship for postdoctoral researchers. Columbia University and University of Cambridge.
- 2011/2012 **Best Student Award in MSc. of Multimedia and Communications**, University Carlos III in Madrid (1/20).
- 2010/2011 **National Best Student Award in Electrical Engineering**, Spanish Ministry of Education.
- 2010/2011 **Best Student Award in Engineering**, ‘Exmo. Ayuntamiento de Sevilla’ (1/1000).
- 2010/2011 **Best Student Award in Engineering**, ‘Real Maestranza de Sevilla’ (1/1000).
- 2010/2011 **Best Student Award in Engineering**, ‘Caja de Ingenieros’ (1/1000).
- 2010/2011 **Best Student Award in Electrical Engineering**, University of Seville (1/200).

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## Teaching Experience

- 2017 (Jul) **Instructor and Course Developer:** Natural Language Processing (PhD students), 2 weeks (6h/day).  
Columbia Business School, Columbia University.
- 2017 (Jan) **Instructor and Course Developer:** Data Science 1-week bootcamp for PhD students and postdoctoral researchers, as part of the Collaboratory project.  
Data Science Institute, Columbia University.
- 2017 **MSc. Research Project Supervisor:** Scalable approaches for training word embeddings.  
Department of Computer Science, Columbia University.
- 2014/2015 **Teaching Assistant:** Communication Theory (Undergraduate).  
University Carlos III in Madrid.
- 2013/2014 **BSc. Supervisor:** Probability Estimation in Basketball.  
University Carlos III in Madrid.
- 2013/2014 **Teaching Assistant:** Communication Theory (Undergraduate).  
University Carlos III in Madrid.
- 2011/2012 **Teaching Assistant:** Network Access Technologies (Undergraduate).  
University Carlos III in Madrid.

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## Research Projects

- 2011-2012 “Analysis, Design and Optimization of Next Generation Wireless Communications Systems” (Scientific National Researching Plan, in collaboration with University of Porto).  
Funding Organization: Spanish Research Ministry. Principal Investigator: Fernando Perez-Cruz.
- 2011-2012 “Estimation, Transmission and Optimization in Sensor Networks”.  
Funding Organizations: Government of Madrid and University Carlos III in Madrid.  
Principal Investigator: Fernando Perez-Cruz.

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## Organizing Committees

- 2018 **Workflow Chair at Artificial Intelligence and Statistics (AISTATS)**, Lanzarote, Spain.
- 2017 **Workshop Organizer at Neural Information Processing Systems (NIPS)**, *Advances in Approximate Bayesian Inference*, Long Beach, CA, USA.
- 2012 **Volunteer at Neural Information Processing Systems (NIPS)**, Lake Tahoe, USA.
- 2012 **Volunteer at Artificial Intelligence and Statistics (AISTATS)**, La Palma, Spain.

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## Grants

- 2012 (Jan)- (Competitive) **PhD. Scholarship**, by the Spanish Ministry of Education.
- 2015 (Sep) University Carlos III in Madrid (Department of Signal Theory and Communications).  
Supervisor: Fernando Perez-Cruz.
- 2010-2011 **MSc. Studentship**, at University Carlos III in Madrid.
- 2010 (Jul and Sep) “**Introduction to Research**” **Grant**, University of Seville.  
Department of Signal Theory and Communications. Supervisor: Sergio Antonio Cruces Álvarez.
- 2010 (May-Jul) **BSc. Thesis Grant**, provided by ASITANO, PRODETUR and University of Seville.
- 2009 (Jul and Aug) “**Introduction to Research**” **Grant (JAE-Intro)**, Spanish National Research Council (CSIC) at Institute of Optics ‘Daza de Valdés’ (Madrid).  
Group of non-linear dynamics in fiber optics. Supervisor: Juan Diego Ania Castañón.
- 2005 - 2010 **Competitive AICIA and School of Engineering Studentship for undergraduates**, University of Seville.

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## Languages

- Spanish** Native language
- English** High level (written and spoken)
- French** Basic level (written and spoken)

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## Computing skills

- OS **MacOS, Linux, Windows**
- Mathematical **MatLab**
- Programming **C/C++, Java, Python**
- Other **Android SDK**

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## Additional education

- 2013 (Jan-Apr) **Android: Applications Programming**, Distance learning course organized by University of Valencia, Spain.  
12 weeks
- 2012 (Apr) **Machine Learning Summer School 2012**, La Palma (Canary Islands, Spain), University Carlos III in Madrid, Max Plank Institute Tuebingen, University of Sheffield.  
9 days

- 2011 (Aug) **PhD. Summer School in Advanced Signal Processing and Machine Learning**, *Technical University of Denmark (DTU)*, Lyngby (Denmark), 40 hours.
- 2010 (Aug) **Immersion in English Language (Intermediate-2 Level)**, *International University Menéndez Pelayo*, Barcelona (Spain), 40 hours.
- 2008 (Aug) **English Course (Upper Intermediate Level)**, *LISA! Languages*, Limerick (Ireland), 45 hours.
- 2007 (Aug) **English Course**, *EF Education First*, Saint Julian's (Malta), 52,5 hours.
- 2003 - 2005 **Elementary Grade of English**, *Official School of Languages*, Almería (Spain).

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## Other merits

- 2016 - Present **Member of NYC Ascent**, a consortium to connect Computer Science researchers and entrepreneurs.  
Participants: Columbia University, Cornell University, City University of NY, New York University
- 2014 - 2015 **Additional affiliations**, at *University of Sheffield (UK)* and *Gregorio Marañón Health Research Institute (Spain)*.
- 2008 - 2010 **Member of LEEM**, a Spanish student association (*Laboratory for Space and Microgravity Research*). PIC programming and PCB design. Worked organizing the IV Conference *Spanish Space Students (S3)*, at University of Seville (4th and 5th of March, 2010).
- 2008 **First Certificate on English (FCE)**, *University of Cambridge*, Grade B.

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## Referees

- **David M. Blei**. Email: david.blei@columbia.edu
- **Fernando Perez-Cruz**. Email: fperezcr@stevens.edu
- **Antonio Artés-Rodríguez**. Email: antonio@tsc.uc3m.es