

# Francisco J. R. Ruiz

Columbia University  
Department of Computer Science  
10027, New York (NY, USA)  
✉ f.ruiz@columbia.edu

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## Academic Employment

- 2016 (Oct) - **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 Researcher**, *Columbia University in the City of New York*.  
Advanced probabilistic modeling and Machine learning  
Supervisor: David M. Blei.

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## 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).

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## 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. To appear.
- 2016 M. F. Pradier, F. J. R. Ruiz, F. Perez-Cruz, *Prior Design for Dependent Dirichlet Processes*, 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

- 2016 F. J. R. Ruiz, I. Valera, L. Svensson, F. Perez-Cruz, *Infinite Factorial Finite State Machine for Blind Multiuser Channel Estimation*, IEEE Transactions on Signal Processing. Under review.

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## Conferences

- 2017 C. Naesseth, F. J. R. Ruiz, S. Linderman, D. M. Blei, *Reparameterization gradients through acceptance-rejection sampling algorithms*, Artificial Intelligence and Statistics (AISTATS).
- 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).
- 2016 M. Rudolph, F. J. R. Ruiz, S. Mandt, D. M. Blei, *Exponential family embeddings*, Advances in Neural Information Processing Systems (NIPS).
- 2016 F. J. R. Ruiz, M. K. Titsias, D. M. Blei, *Overdispersed black-box variational inference*, Uncertainty in Artificial Intelligence (UAI).
- 2015 I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz, *Infinite factorial dynamical model*, Advances in Neural Information Processing Systems (NIPS).
- 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). Nice (France). Invited contribution.
- 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. Corredra 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 (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).
- 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

- 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 (Jan) **Instructor and Course Developer:** Data Science 1-week boot-camp for PhD students and postdoctoral researchers, as part of the Collaboratory project.  
Department of Computer Science, Fu Foundation School of Engineering (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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## Grants

- 2016 (Oct)-2019 (Sep) **Marie Skłodowska-Curie Fellowship**, *Probabilistic Modeling of Electronic Health Records*, by the European Commission (H2020).  
Prestigious European fellowship for researchers.  
Columbia University and University of Cambridge.  
Supervisors: David M. Blei and Zoubin Ghahramani.
- 2012 (Jan)-2015 (Sep) **(Competitive) PhD. Scholarship**, by the Spanish Ministry of Education.  
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 **BSc. Thesis Grant**, provided by ASITANO, PRODETUR and University of Seville.  
(May-Jul)
- 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.

## Languages

<b>Spanish</b>	Native language	<b>French</b>	Basic level (written and spoken)
<b>English</b>	High level (written and spoken)		

## Computing skills

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

## 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).

## 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)*.
- 2012 (Dec) **Volunteer at NIPS Conference**, Lake Tahoe, USA.
- 2012 (Apr) **Volunteer at AISTATS Conference**, La Palma, 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

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