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.

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 Simposium of International Union of Radio Science (URSI), Bilbao (Spain).

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). 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). Copenhaguen (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).

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).

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.

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.

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.

Grants

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 (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.

Languages

Spanish Native language

English High level (written and spoken)

French Basic 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).*

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.

Referees

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