CURRICULUM VITAE

FRANCISCO JESUS RODRIGUEZ RUIZ
Research Scientist (DeepMind)

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PROFESSIONAL APPOINTMENTS

Research Scientist. DeepMind (London, UK) 2019 – Present
- Deep Learning Team (Data Efficient and Bayesian Deep Learning Group)
- Research topics: Variational inference, probabilistic methods, Bayesian deep networks

Postdoctoral Research Fellow. Univ. of Cambridge (UK) & Columbia Univ. (USA) 2016 – 2019
- Marie Skłodowska-Curie Fellowship (European Commission)
- Working with Prof. David M. Blei and Prof. Zoubin Ghahramani
- Research topics: Probabilistic models for econometrics (shopping and location data) and electronic health records. Efficient and flexible variational inference algorithms

Postdoctoral Researcher. Columbia University (USA) 2015 – 2016
- Working with Prof. David M. Blei
- Research topics: Probabilistic models for econometrics (shopping data). Variational inference

EDUCATION AND TRAINING

Ph.D. in Machine Learning. University Carlos III in Madrid (Spain) 2015
- Research topics: Bayesian non-parametrics for psychiatric applications and signal processing
- Visiting Student Research Collaborator (3 months). University of Sheffield (UK) 2014
  Supervisor: Prof. Neil D. Lawrence
  Research topic: Natural gradients for collapsed variational inference
- Visiting Student Research Collaborator (3 months). Princeton University (USA) 2013
  Supervisor: Prof. David M. Blei
  Research topic: Bayesian non-parametric models for recommendation systems

Ms.C. in Machine Learning and Communications. University Carlos III in Madrid (Spain) 2012

Telecommunications Engineering. University of Seville (Spain) 2010

RESEARCH SUPPORT

Marie Skłodowska-Curie Fellowship (European Commission) 2016 – 2019

Postdoctoral researcher. Hosted by Prof. David M. Blei 2015 – 2016

(Competitive) Ph.D. Scholarship by the Spanish Ministry of Education 2012 – 2015
- FPU Grant No. AP2010-5333

Introduction to research grant. University of Seville (Spain). 2 months 2010

Introduction to research grant. Spanish National Research Council (Spain). 2 months 2009
- Institute of Optics “Daza de Valdés”

HONORS AND AWARDS

Fellowships / Grants

Marie Skłodowska-Curie Fellowship for postdoctoral researchers. European Commission 2016

Nvidia Hardware Grant 2016

Ms.C. Studentship. University Carlos III in Madrid 2010

(Competitive) “FPU” Ph.D. Scholarship. Spanish Ministry of Education 2012

Bs.C. Thesis grant. Asitano, Prodetur, and University of Seville 2010

Competitive Engineering studentship for high school students. University of Seville 2005
- Covered the tuition and accommodation for the 5 years of the Engineering degree

Reviewer / Presenter Awards

Top 33% Reviewer (International Conference on Machine Learning) 2020

Best Reviewer Award (Advances in Neural Information Processing Systems Conference) 2019

Best Reviewer Award (International Conference on Machine Learning) 2019

Best Reviewer Award (Advances in Neural Information Processing Systems Conference) 2018

Outstanding Program Committee Award (AAAI Conference on Artificial Intelligence) 2018

Best Reviewer Award (Advances in Neural Information Processing Systems Conference) 2017

IBM Poster Presentation Award (Machine Learning Symposium). NY Academy of Sciences 2017

Best Student Awards

Best Student Award in M.Sc. "Machine Learning and Communications" (1/20) 2012

National Best Student Award. Ministry of Education (#1 in Telecom. Engineering in Spain) 2011

University-level awards for outstanding academic grades
- Best Student Award in Telecommunications Engineering. University of Seville (1/200) 2011
- Best Student Award in Engineering. "Ayto. de Sevilla" (1/1000) 2011
- Best Student Award in Engineering. "Real Maestranza de Sevilla" (1/1000) 2011
- Best Student Award in Engineering. "Caja de Ingenieros" (1/1000) 2011

TEACHING

Columbia University

Instructor and class developer. Columbia University (USA). Columbia Business School 2017
- Class on Natural Language Processing for Ph.D. students. 2 weeks (6h/day)
- Tasks: Develop and teach course material and lab sessions. Prepare homework assignments

Instructor and course developer. Columbia University (USA). Data Science Institute 2017
- Data Science Bootcamp for Ph.D. students and postdoctoral researchers. 1 week (6h/day)
- Tasks: Develop and teach course material and lab sessions
- Highly positive feedback from students

M.Sc. project supervisor. Columbia University (USA). Computer Science Department 2017
- Project title: "Scalable approaches for training word embeddings"

University Carlos III in Madrid

Teaching assistant. University Carlos III in Madrid (Spain). Department of Signal Processing
- Communication Theory (class for undergraduates) 2014 – 2015
- Network Access Technologies (class for undergraduates) 2012
- Feedback survey scores above 4.5/5 in all courses
- Received congratulatory letter from the Vice President of Undergraduate Studies

B.Sc. project supervisor. University Carlos III in Madrid (Spain) 2014
- Project title: "Probability estimation in basketball"

ORGANIZING COMMITTEES

Program Chair. Artificial Intelligence and Statistics 2022

Advisor and co-lead of the "I Can't Believe It's Not Better!" Initiative 2022

Workshop Organizer. Neural Information Processing Systems 2021
- "I (Still) Can't Believe It's Not Better!" Workshop

Workshop Organizer. Neural Information Processing Systems 2020
- "I Can't Believe It's Not Better!" Workshop

Symposium Organizer. 2nd Symposium on Advances in Approximate Bayesian Inference 2019

Symposium Organizer. 1st Symposium on Advances in Approximate Bayesian Inference 2018

Workflow Chair. Artificial Intelligence and Statistics. Lanzarote (Spain) 2018

Workshop Organizer. Neural Information Processing Systems. Long Beach (USA) 2017
- "Advances in Approximate Bayesian Inference" Workshop

Volunteer at conferences
- Advances in Neural Information Processing Systems. South Lake Tahoe (USA) 2012
- International Conference on Artificial Intelligence and Statistics. La Palma (Spain) 2012

PUBLICATIONS IN PEER-REVIEWED JOURNALS

Under review

X. Han, X. Chen, F. J. R. Ruiz, L. Liu. "Fitting autoregressive graph generative models through maximum likelihood estimation." Journal of Machine Learning Research. 2022

Accepted

S. Athey, R. Donnelly, F. J. R. Ruiz, D. M. Blei. "Counterfactual inference for consumer choice across many product categories." Quantitative Marketing and Economics. 2021

A. B. Dieng, F. J. R. Ruiz, D. M. Blei. "Topic modeling in embedding spaces." Transactions of the Association for Computational Linguistics. 2020

F. J. R. Ruiz, S. Athey, D. M. Blei. "Shopper: A probabilistic model of consumer choice with complements and substitutes." Annals of Applied Statistics. 2020
- "Best of AoAS session" at Joint Statistical Meetings of the Americal Statistics Association. 2020

H. M. Levitin, J. Yuan, Y. L. Cheng, F. J. R. Ruiz, E. C. Bush, J. N. Bruce, P. Canoll, A. Iavarone, A. Lasorella, D. M. Blei, P. A. Sims. "De novo gene signature identification from single-cell RNA-seq with hierarchical Poisson factorization." Molecular Systems Biology. 2019

S. Athey, D. M. Blei, R. Donnelly, F. J. R. Ruiz, T. Schmidt. "Estimating heterogeneous consumer preferences for restaurants and travel time using mobile location data." American Economics Association Papers and Proceedings. 2018

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. 2018

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. 2017

M. Pradier, F. J. R. Ruiz, F. Perez-Cruz. "Prior design for dependent Dirichlet processes: An application to marathon modeling." PlosONE. 2016

I. Valera, F. J. R. Ruiz, P. M. Olmos, C. Blanco, F. Perez-Cruz. "Infinite continuous feature model for psychiatric comorbidity analysis." Neural Computation. 2016

I. Valera, F. J. R. Ruiz, F. Perez-Cruz. "Infinite factorial unbounded-state hidden Markov model." IEEE Transactions on Pattern Analysis and Machine Intelligence. 2015

F. J. R. Ruiz, F. Perez-Cruz. "A generative model for predicting outcomes in college basketball." Journal of Quantitative Analysis in Sports (Special Issue: Prediction methodology for the NCAA men's basketball tournament). 2015

F. J. R. Ruiz, I. Valera, C. Blanco, F. Perez-Cruz. "Bayesian nonparametric comorbidity analysis of psychiatric disorders." Journal of Machine Learning Research. 2014

PUBLICATIONS IN PEER-REVIEWED CONFERENCES

Accepted

F. J. R. Ruiz, M. K. Titsias, T. Cemgil. A. Doucet. "Unbiased gradient estimation for variational auto-encoders using coupled Markov chains." Uncertainty in Artificial Intelligence (online). Runner-up for best paper award. 2021

M. K. Titsias, F. J. R. Ruiz, S. Nikoloutsopoulos, A. Galashov. "Information theoretic meta learning with Gaussian processes." Uncertainty in Artificial Intelligence (online). 2021

X. Chen, X. Han, J. Hu, F. J. R. Ruiz, L. Liu. “Order matters: Probabilistic modeling of node sequence for graph generation.” International Conference on Machine Learning (online). 2021

L. Richter, A. Boustati, N. Nüsken, F. J. R. Ruiz, Ö. D. Akyildiz. “VarGrad: A low-variance gradient estimator for variational inference.” Neural Information Processing Systems (online). 2020

A. B. Dieng, F. J. R. Ruiz, D. M. Blei. “Topic modeling in embedding spaces.” Conference on Empirical Methods in Natural Language Processing (online). 2020

F. J. R. Ruiz, M. K. Titsias. “A contrastive divergence for combining variational inference and MCMC.” International Conference on Machine Learning (Long Beach, USA). 2019

M. K. Titsias, F. J. R. Ruiz. “Unbiased implicit variational inference.” Artificial Intelligence and Statistics (Naha, Japan). 2019

F. J. R. Ruiz, M. K. Titsias, A. B. Dieng, D. M. Blei. “Augment and reduce: Stochastic inference for large categorical distributions.” International Conference in Machine Learning (Stockholm, Sweden). 2018

M. Rudolph, F. J. R. Ruiz, S. Athey, D. M. Blei. “Structured embeddings models for grouped data.” Advances in Neural Information Processing Systems (Long Beach, USA). 2017

L. Liu, F. J. R. Ruiz, S. Athey, D. M. Blei. “Context selection for embeddings models.” Advances in Neural Information Processing Systems (Long Beach, USA). 2017

C. A. Naesseth, F. J. R. Ruiz, S. W. Linderman, D. M. Blei. “Reparameterization gradients through acceptance-rejection sampling algorithms.” International Conference on Artificial Intelligence and Statistics (Fort Lauderdale, USA). Best paper award. 2017

F. J. R. Ruiz, M. K. Titsias, D. M. Blei. “The generalized reparameterization gradient.” Advances in Neural Information Processing Systems (Barcelona, Spain). 2016

M. Rudolph, F. J. R. Ruiz, S. Mandt, D. M. Blei. “Exponential family embeddings.” Advances in Neural Information Processing Systems (Barcelona, Spain). 2016

F. J. R. Ruiz, M. K. Titsias, D. M. Blei. “Overdispersed black-box variational inference.” Uncertainty in Artificial Intelligence (Jersey City, USA). Oral presentation. 2016

I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz. “Infinite factorial dynamical model.” Advances in Neural Information Processing Systems (Montreal, Canada). 2015

I. Valera, F. J. R. Ruiz, L. Svensson, F. Perez-Cruz. “A Bayesian nonparameteric approach for blind multiuser channel estimation.” European Signal Processing Conference (Nice, France). 2015

P. Gopalan, F. J. R. Ruiz, R. Ranganath, D. M. Blei. “Bayesian nonparametric Poisson factorization for recommendation systems.” International Conference on Artificial Intelligence and Statistics (Reykjavik, Iceland). 2014

F. J. R. Ruiz, I. Valera, C. Blanco, F. Perez-Cruz. “Bayesian nonparametric modeling of suicide attempts.” Advances in Neural Information Processing Systems (South Lake Tahoe, USA). Spotlight session. 2012

F. J. R. Ruiz, F. Perez-Cruz. “Zero-error codes for the noisy-typewriter channel.” IEEE Information Theory Workshop (Paraty, Brazil). 2011

ARXIV PREPRINTS

A. B. Dieng, F. J. R. Ruiz, D. M. Blei. “The dynamic embedded topic model.” 2020

A. B. Dieng, F. J. R. Ruiz, D. M. Blei, M. K. Titsias. “Prescribed generative adversarial networks.” Journal of Machine Learning Research. 2019

D. Tran, F. J. R. Ruiz, S. Athey, D. M. Blei. “Bayesian model criticism with potential outcomes.” 2017

EXTRA TRAINING

Android: Applications programming. University of Valencia (Spain). 12 weeks 2013

Machine Learning summer school. La Palma (Spain). 9 days 2012

Machine Learning summer school. Technical University of Denmark. 40 hours 2011

SERVICE TO PROFESSION

Action Editor: Transactions on Machine Learning Research

Area Chair for Machine Learning conferences

- International Conference on Machine Learning, International Conference on Learning Representations, Advances in Neural Information Processing Systems

Reviewer

- Journal of Machine Learning Research, IEEE Transactions of Pattern Analysis and Machine Intelligence, Journal of the Royal Statistical Society, IEEE Transactions of Cognitive Communications and Networking, Annals of Applied Statistics, Statistics and Computing, Neural Networks, Entropy
- Machine Learning conferences (International Conference on Machine Learning, Advances in Neural Information Processing Systems, International Conference on Artificial Intelligence and Statistics, International Conference on Learning Representations, Uncertainty in Artificial Intelligence, AAAI Conference on Artificial Intelligence)

MEDIA COVERAGE

Interview at *El País Retina.* "The next frontier of AI: Systems that doubt themselves." 2018

OTHER MERITS

Languages: Spanish (native), English (fluent)

Software: Python, C/C++, MatLab, Java

Professional memberships: NYC Ascent, National Postdoctoral Association (NPA), Marie Curie Alumni Association

Other interests: Board games, piano, swing dancing

- Developed a board game recommendation website: https://www.boardgamefinder.net

REFEREES

David M. Blei (Columbia University) <david.blei@columbia.edu>

Susan Athey (Stanford University) <athey@susanathey.com>

Michalis K. Titsias (DeepMind) <mtitsias@google.com>

Fernando Perez-Cruz (Swiss Data Science Center) <fernando-perezcruz@sdsc.ethz.ch>