

EDUCATION *PhD*, Signal Processing, Carlos III University of Madrid. 2019
Thesis: Sequential and adaptive Bayesian computation for inference and optimization
Supervisor: Joaquín Míguez.

MSc, Communications Engineering, Istanbul Technical University. 2012
Thesis Title: A structured sparse decomposition method for audio signals

BSc, Communications Engineering, Istanbul Technical University. 2010
Thesis Title: Anisotropic diffusion in image processing

WORK EXPERIENCE *Research Fellow*, University of Warwick, UK. Jan. 2019 –
joint appointment between Dept. of Computer Science and Dept. of Statistics.
Based at The Alan Turing Institute, London.

Research Assistant, Carlos III University of Madrid, Spain. Oct. 2015 – Dec. 2018
within Signal Processing Group (GTS), Dept. of Signal Theory and Communications.
on *stochastic filters*; *Bayesian inference*; *Monte Carlo methods*; *stochastic optimisation*.

Visiting Researcher, The Alan Turing Institute, London, UK. June – August 2018
within the programme Data-Centric Engineering, hosted by Chris Oates.
on *Bayesian inference*; *variational methods*; *probabilistic numerics*.

Visiting Research Scientist, Fraunhofer HHI, Berlin, Germany. May – June 2018
within Signal and Information Processing Group.
on *machine learning applied to vehicular communications*.

Visiting Researcher, Imperial College London, UK. January – March 2018
under the supervision of Dan Crisan, Department of Mathematics.
on *stochastic filtering and optimisation*.

Visiting Research Scientist, Fraunhofer HHI, Berlin, Germany. August 2017
on *proximal forward-backward splitting methods*; *sparse dictionary learning*.

Research Assistant, Boğaziçi University, Istanbul, Turkey. 2012 – 2015
under the supervision of A. Taylan Cemgil with Statistical Inference Group.
on *Bayesian statistics*; *machine learning*; *probabilistic inference*.

Quantitative Researcher, algosis inc. 2014 – 2015
on *financial time series analysis*; *portfolio optimisation*; *algorithmic trading*.

Research Assistant, Istanbul Technical University, Turkey. 2010 – 2012
within Multimedia Signal Processing and Pattern Recognition Group
on *convex optimisation*; *machine learning*; *signal processing*.

PAPERS

1. *Convergence rates for optimised adaptive importance samplers*, Ö. D. Akyıldız, J. Míguez, [arXiv:1903.12044](https://arxiv.org/abs/1903.12044).
2. *Dictionary filtering: a probabilistic approach to online matrix factorisation*, Ö. D. Akyıldız, J. Míguez, *Signal, Image and Video Processing*, 2018.

3. *A probabilistic incremental proximal gradient method*, Ö. D. Akyıldız, É. Chouzenoux, V. Elvira, J. Miguez, [arXiv:1812.01655](#), 2018.
4. *Parallel sequential Monte Carlo for stochastic optimization*, Ö. D. Akyıldız, D. Crisan, J. Miguez, [arXiv:1811.09469](#), 2018.
5. *The Incremental Proximal Method: A Probabilistic Perspective*, Ö. D. Akyıldız, V. Elvira, J. Miguez, ICASSP 2018.
6. *A probabilistic interpretation of replicator-mutator dynamics*, Ö. D. Akyıldız, [arXiv:1712.07879](#), 2017.
7. *Adaptive noisy importance sampling for stochastic optimization*, Ö. D. Akyıldız, I. P. Marino, J. Miguez, IEEE CAMSAP 2017.
8. *Nudging the particle filter*, Ö. D. Akyıldız, J. Miguez, [arXiv:1708.07801](#), 2017.
9. *On the Relationship between Online Optimizers and Recursive Filters*, Ö. D. Akyıldız, V. Elvira, J. Fernandez-Bes, J. Miguez, NIPS Workshop on Optimizing the Optimizers, Barcelona, Spain, 2016.
10. *Matrix Factorisation with Linear Filters*, Ö. D. Akyıldız, Preprint, [arXiv:1509.02088](#), 2015.
11. *Online Matrix Factorization via Broyden Updates*, Ö. D. Akyıldız, Preprint, [arXiv:1506.04389](#), 2015.
12. *Primal-Dual Algorithms for Audio Decomposition Using Mixed Norms*, İ. Bayram, Ö. D. Akyıldız, Journal of Signal, Image and Video Processing, 2014.
13. *An Analysis Prior Based Decomposition Method for Audio Signals*, Ö. D. Akyıldız and İ. Bayram, EUSIPCO 2012.

TEACHING EXPERIENCE

Teaching Assistant, Universidad Carlos III, Madrid, Spain.

Systems and Signals

Fall 2018

in Dept. of Signal Theory and Communications.

Teaching Assistant (Voluntarily), Boğaziçi University, Istanbul, Turkey.

Monte Carlo methods (graduate course) $\times 3$

2013 – 2015

in Dept. of Computer Engineering.

Bayesian statistics and machine learning (graduate course) $\times 2$

2013 – 2014

in Dept. of Computer Engineering.

PROFESSIONAL ACTIVITIES

Reviewed for the following journals and conferences: IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; Digital Signal Processing, Elsevier; EURASIP Journal on Image and Video Processing; CAMSAP 2017.

SKILLS

MATLAB, C, Python, LaTeX.

VISITS & CONFERENCES

Bayesian Comp. for High-Dimensional Stat. Models, Singapore.

27-31 Aug. 2018

BayesComp 2018, Barcelona, Spain.

26-28 March 2018

SMC 2017 Workshop, Uppsala, Sweden.

29 August – 1 September 2017

NIPS Conference, Barcelona, Spain.

5-10 December 2016

European Workshop on Reinforcement Learning, Barcelona.

3-4 December 2016

IEEE Workshop on Statistical Signal Processing, Palma, Spain. 26-29 June 2016

School of Mathematical Sciences, Queen Mary University of London, UK.

- 14-24 Dec. 2015 — 1-5 Feb. 2016 — 16-20 May 2016

Sequential Monte Carlo Workshop, Imperial College London, UK. 21-23 Dec. 2015

GRADUATE SCHOOLS

Dobbiaco Summer School on Probabilistic Numerics 19-23 June 2017
Dobbiaco, Italy.

Summer School on Uncertainty Quantification for Applied Problems 4-8 July 2016
Basque Center for Applied Mathematics, Bilbao, Spain.

Machine Learning Summer School 13-24 July 2015
Max Planck Institute of Intelligent Systems, Tübingen, Germany.
(accepted with extremely competitive full financial support.)

Foundations and Advances in Stochastic Filtering 22-26 June 2015
Barcelona, Spain.

TALKS

- Probabilistic Incremental Optimization, Warwick. May 10, 2019
- Parallel SMC for stochastic optimization, at Bogazici. Dec. 20, 2018
- Nudging the particle filter, at UC3M. Sept. 25, 2018
- Nudging the particle filter, at Imperial College London. Feb. 16, 2018
- Adaptive noisy importance sampling, at UC3M. November 28, 2017
- A filtering approach to stochastic optimisation, at UC3M. June 6, 2017
- Filtering in high-dimensional spaces, at UC3M. November 14, 2016
- Matrix Factorisation with Linear Filters, at UC3M. October 22, 2015
- Particle methods for parameter estimation, at Bogazici. March 31, 2015
- An online EM algorithm and applications, at Bogazici. November 26, 2013
- Stochastic approximations, at Bogazici. March 26, 2013
- Learning Linear Dynamical Systems, at Bogazici. January 21, 2013