

Education

- 2019 **PhD**, *Signal Processing*, Universidad Carlos III de Madrid.
Thesis: Sequential and adaptive Bayesian computation for inference and optimization
Supervisor: Joaquín Míguez.
- 2012 **MSc**, *Communications Engineering*, Istanbul Technical University.
Thesis: A structured sparse decomposition method for audio signals
- 2010 **BSc**, *Communications Engineering*, Istanbul Technical University.
Thesis: Anisotropic diffusion in image processing

Work Experience

- From 01/2019 **Research Fellow**, University of Warwick, UK.
joint appointment between Dept. of Computer Science and Dept. of Statistics, based at The Alan Turing Institute, London.
- 2015 – 2019 **Research Assistant**, Carlos III University of Madrid, Spain.
within the Signal Processing Group (GTS), Dept. of Signal Theory and Communications.
- June - August 2018 **Visiting Researcher**, The Alan Turing Institute, London, UK.
within the programme Data-Centric Engineering, hosted by Chris Oates
- May - June 2018 **Visiting Research Scientist**, Fraunhofer Heinrich-Hertz Institute (HHI), Berlin, Germany.
within the Signal and Information Processing Group, hosted by Zoran Utkovski.
- Jan. - March 2018 **Visiting Researcher**, Imperial College London, UK.
under the supervision of Dan Crisan, Department of Mathematics.
- August 2017 **Visiting Research Scientist**, Fraunhofer Heinrich-Hertz Institute (HHI), Berlin, Germany.
within the Signal and Information Processing Group, hosted by Zoran Utkovski.
- 2012 – 2015 **Research Assistant**, Boğaziçi University.
under the supervision of A. Taylan Cemgil with Statistical Inference Group.
- 2014 – 2015 **Quantitative Researcher**, algosis inc.
- 2010 – 2012 **Research Assistant**, Istanbul Technical University.
within the Multimedia Signal Processing and Pattern Recognition Group.

Teaching/Supervision Experience

- Supervision *Ayman Boustati*, co-supervised with Theodoros Damoulas
- Fall 2018 **Teaching Assistant**, Systems and Signals, in Dept. of Signal Theory and Communications, Universidad Carlos III de Madrid.
- 2013 – 2015 **Teaching Assistant** (Voluntary), Boğaziçi University, Istanbul, Turkey.
Monte Carlo methods (graduate course) $\times 3$
Bayesian statistics and machine learning (graduate course) $\times 2$

Papers

- 2020 *Generalized Bayesian Filtering via Sequential Monte Carlo*, A. Boustati, Ö. D. Akyildiz, T. Damoulas, A. M. Johansen, arXiv:2002.09998.
- 2020 *Nonasymptotic analysis of Stochastic Gradient Hamiltonian Monte Carlo under local conditions for nonconvex optimization*, Ö. D. Akyildiz, S. Sabanis, arXiv:2002.05465.
- 2020 *Nudging the particle filter*, Ö. D. Akyildiz, J. Míguez, In *Statistics and Computing*, 30, 305–330.
- 2019 *Probabilistic sequential matrix factorization*, Ö. D. Akyildiz, G. J.J. van den Burg, T. Damoulas, M. J. Steel arXiv:1910.03906.
- 2019 *Nonasymptotic estimates for Stochastic Gradient Langevin Dynamics under local conditions in nonconvex optimization*, Y. Zhang, Ö. D. Akyildiz, T. Damoulas, S. Sabanis, arXiv:1910.02008.
- 2019 *A probabilistic incremental proximal gradient method*, Ö. D. Akyildiz, É. Chouzenoux, V. Elvira, J. Miguez, In *IEEE Signal Processing Letters*.
- 2019 *Dictionary filtering: a probabilistic approach to online matrix factorisation*, Ö. D. Akyildiz, J. Miguez, *Signal, Image and Video Processing*, June 2019, 13(4):737-744.
- 2019 *Convergence rates for optimised adaptive importance samplers*, Ö. D. Akyildiz, J. Miguez, arXiv:1903.12044.
- 2018 *Parallel sequential Monte Carlo for stochastic gradient-free nonconvex optimization*, Ö. D. Akyildiz, D. Crisan, J. Miguez, arXiv:1811.09469, 2018.
- 2018 *The Incremental Proximal Method: A Probabilistic Perspective*, Ö. D. Akyildiz, V. Elvira, J. Miguez, ICASSP 2018.
- 2017 *A probabilistic interpretation of replicator-mutator dynamics*, Ö. D. Akyildiz, arXiv:1712.07879, 2017.
- 2017 *Adaptive noisy importance sampling for stochastic optimization*, Ö. D. Akyildiz, I. P. Marino, J. Miguez, IEEE CAMSAP 2017.
- 2016 *On the Relationship between Online Optimizers and Recursive Filters*, Ö. D. Akyildiz, V. Elvira, J. Fernandez-Bes, J. Miguez, NIPS Workshop on Optimizing the Optimizers, Barcelona, Spain, 2016.
- 2015 *Matrix Factorisation with Linear Filters*, Ö. D. Akyildiz, arXiv:1509.02088.
- 2015 *Online Matrix Factorization via Broyden Updates*, Ö. D. Akyildiz, Preprint, arXiv:1506.04389.
- 2014 *Primal-Dual Algorithms for Audio Decomposition Using Mixed Norms*, İ. Bayram, Ö. D. Akyildiz, *Journal of Signal, Image and Video Processing*, 2014.
- 2012 *An Analysis Prior Based Decomposition Method for Audio Signals*, Ö. D. Akyildiz and İ. Bayram, EUSIPCO 2012.

Talks

- Oct. 30, 2019 *Proximal methods from a probabilistic perspective*, at *ProbNum 2019* at the Turing.
- Sep. 16, 2019 *Convergence rates for optimised adaptive importance samplers* (Invited), U. of Edinburgh.
- May 10, 2019 *Probabilistic Incremental Optimization* (Invited), University of Warwick.
- Dec. 20, 2018 *Parallel SMC for stochastic optimization* (Invited), Bogazici University.
- Sep. 25, 2018 *Nudging the particle filter*, Universidad Carlos III de Madrid.

Feb. 16, 2018 *Nudging the particle filter* (Invited), Imperial College London.
Nov. 28, 2017 *Adaptive noisy importance sampling*, Universidad Carlos III de Madrid.

Professional Activities

Reviewer NeurIPS, ICML, IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; Digital Signal Processing; ECML.

Visits & Workshops

16–19/9/19 School of Mathematics, University of Edinburgh, Edinburgh, UK.
18–23/8/19 School of Mathematics, University of Edinburgh, Edinburgh, UK.
27–31/8/18 Bayesian Computation for High-Dimensional Statistical Models, Singapore.
26–28/3/18 BayesComp 2018, Barcelona, Spain.
29/8–1/9/17 SMC 2017 Workshop, Uppsala, Sweden (Poster).
5–10/12/16 NIPS Conference, Barcelona, Spain.
3–4/12/16 European Workshop on Reinforcement Learning, Barcelona.
26–29/6/16 IEEE Workshop on Statistical Signal Processing, Palma, Spain.
16–20/5/16 School of Mathematical Sciences, Queen Mary University of London, UK.
1–5/2/16 School of Mathematical Sciences, Queen Mary University of London, UK.
14–24/12/15 School of Mathematical Sciences, Queen Mary University of London, UK.
21–23/12/15 Sequential Monte Carlo Workshop, Imperial College London, UK.

Graduate Schools

19–23/6/17 *Dobbiaco Summer School on Probabilistic Numerics*, Dobbiaco, Italy.
4–8/7/16 *Summer School on Uncertainty Quantification for Applied Problems*, Basque Center for Applied Mathematics, Bilbao, Spain.
13–24/7/15 *Machine Learning Summer School*, Max Planck Institute of Intelligent Systems, Tübingen, Germany. (awarded full financial support.)
22–26/6/15 *Foundations and Advances in Stochastic Filtering*, Barcelona, Spain.