Ömer Deniz Akyıldız

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EDUCATION

PhD, Signal Processing, Carlos III University of Madrid.   Ongoing
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 in the Alan Turing Institute, London.

Research Assistant, Carlos III University of Madrid, Spain.   Oct. 2015 – Jan. 2019
within Signal Processing Group (GTS), Dept. of Signal Theory and Communications.
on *stochastic filters; Bayesian inference; Monte Carlo methods; stochastic optimisation.*

Visiting Researcher, 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
on *convex optimisation; machine learning; signal processing.*

PAPERS

1. *Dictionary filtering: a probabilistic approach to online matrix factorisation*, Ö. D. Akyıldız, J. Miguez, Signal, Image and Video Processing, 1-8, 2018.

2. *A probabilistic incremental proximal gradient method*, Ö. D. Akyıldız, É. Chouzenoux, V. Elvira, J. Miguez, arXiv:1812.01655, 2018.

3. *Parallel sequential Monte Carlo for stochastic optimization*, Ö. D. Akyıldız, D. Crisan, J. Miguez, `arXiv:1811.09469`, 2018.

4. *The Incremental Proximal Method: A Probabilistic Perspective*, Ö. D. Akyıldız, V. Elvira, J. Miguez, ICASSP 2018.

5. *A probabilistic interpretation of replicator-mutator dynamics*, Ö. D. Akyıldız, `arXiv:1712.07879`, 2017.

6. *Adaptive noisy importance sampling for stochastic optimization*, Ö. D. Akyıldız, I. P. Marino, J. Miguez, IEEE CAMSAP 2017.

7. *Nudging the particle filter*, Ö. D. Akyıldız, J. Miguez, `arXiv:1708.07801`, 2017.

8. *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.

9. *Matrix Factorisation with Linear Filters*, Ö. D. Akyıldız, Preprint, `arXiv:1509.02088`, 2015.

10. *Online Matrix Factorization via Broyden Updates*, Ö. D. Akyıldız, Preprint, `arXiv:1506.04389`, 2015.

11. *Primal-Dual Algorithms for Audio Decomposition Using Mixed Norms*, İ. Bayram, Ö. D. Akyıldız, Journal of Signal, Image and Video Processing, 2014.

12. *An Analysis Prior Based Decomposition Method for Audio Signals*, Ö. D. Akyıldız and İ. Bayram, EUSIPCO 2012.

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
Bayes Data Science for Health, Warwick University, UK	21 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

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) × 2 in Dept. of Computer Engineering.	2013 – 2014

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.

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.

Lectures on Large Deviations and Probability Models 1-8 Sept. 2013
Nesin Mathematics Village, Şirince, Turkey.

HONORS

- Protel A.Ş. Graduate Fellowship 2010 – 2012
- Istanbul Metropolitan Municipality Undergraduate Fellowship 2005 – 2008
- Premiership Undergraduate Fellowship 2005 – 2010

TALKS

- 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