

# Sinan Yıldırım

## Resumé

Faculty of Engineering and Natural Sciences  
Sabancı University  
Universite Caddesi  
Tuzla/Istanbul, Turkey  
☎ +90 (0)507 136 3194  
☎ +90 (0)216 483 9583  
✉ [sinanyildirim@sabanciuniv.edu](mailto:sinanyildirim@sabanciuniv.edu)

### Education

- 2009–2013 **PhD**, *Pure Mathematics and Mathematical Statistics, University of Cambridge, UK.*  
2007–2009 **MSc**, *Electrical and Electronics Engineering, Boğaziçi University, Turkey, 4.00/4.00.*  
2002–2007 **BSc**, *Electrical and Electronics Engineering, Boğaziçi University, Turkey, 3.24/4.00.*

### PhD thesis

- title *Maximum Likelihood Parameter Estimation in Time Series Models Using Sequential Monte Carlo*  
date May, 2013  
supervisor Dr. Sumeetpal S. Singh, Department of Engineering, University of Cambridge, UK

### Research

- Research Interests Bayesian inference, time series models, Markov chain Monte Carlo, sequential Monte-Carlo, Approximate Bayesian Computation, online parameter estimation

### Publications **Journal papers:**

- L. Jiang, S. S. Singh, S. Yıldırım (2015), Bayesian tracking and parameter learning for non-linear multiple target tracking models *IEEE Transactions on Signal Processing*
- S. Yıldırım, S. Singh, T. Dean, A. Jasra (2015), Parameter Estimation in Hidden Markov Models with Intractable Likelihoods Using Sequential Monte Carlo, *Journal of Computational and Graphical Statistics*
- S. Yıldırım, L. Jiang, S. S. Singh, and T. Dean (2014), Calibrating the Gaussian Multi-target Tracking Model, *Statistics and Computing*
- S. Yıldırım, S. S. Singh, and A. Doucet (2013), An Online Expectation-Maximisation Algorithm for Changepoint Models, *Journal of Computational and Graphical Statistics*
- S. Yıldırım, A. T. Cemgil, M. Aktar, Y. Özakin, and A. Ertüzün (2010), A Bayesian Deconvolution Approach for Receiver Function Analysis, *IEEE Transactions in Geoscience and Remote Sensing*.
- D. Gençağa, E. E. Kuruoğlu, A. Ertüzün, and S. Yıldırım (2008), Estimation of Time Varying AR  $S\alpha S$  Processes using Gibbs Sampling, *Signal Processing*.

### Conference papers:

- L. Jiang, S. S. Singh, S. Yıldırım, A New Particle Filtering algorithm for Multiple Target Tracking with Non-linear Observations, in the *17<sup>th</sup> International Conference on Information Fusion 2014*
- S. Yıldırım, L. Jiang, S. S. Singh, and T. Dean (2012), A Monte Carlo Expectation Maximisation Algorithm for Parameter Estimation in Multiple Target Tracking, in the *15<sup>th</sup> International Conference on Information Fusion 2012*
- S. Yıldırım, A. T. Cemgil, and S. S. Singh (2012), An Online Expectation-Maximisation Algorithm for Nonnegative Matrix Factorisation Models, *SYSID 2012*
- S. Yıldırım, A. T. Cemgil (2011), Forward smoothing and online expectation-maximisation in Gaussian linear state-space models, *IEEE SIU 2011*.
- S. Yıldırım, A. T. Cemgil, and A. Ertüzün (2009), A Hybrid Method for Deconvolution of Bernoulli-Gaussian Processes, *IEEE ICASSP 2009*.
- S. Yıldırım, M. Saraçlar (2009), Single channel music and speech separation using non-negative matrix factorization, *IEEE SIU 2009*.

### In progress:

- S. Yıldırım, Christophe Andrieu, Arnaud Doucet (2016), On the usefulness of asymmetric acceptance ratio Metropolis-Hastings updates, in preparation
- S. Yıldırım, Christophe Andrieu, Arnaud Doucet (2016), Annealed importance sampling Markov chain Monte Carlo for parameter estimation in hidden Markov models, in preparation

## Work experience

- 2015– **Faculty member**, *Faculty of Engineering and Natural Sciences, Sabancı University, Turkey*, Research and teaching.  
From 01 September 2015
- 2013–2015 **Postdoctoral Research Associate**, *School of Mathematics, University of Bristol, UK*, Member of the EPSRC project “Intractable Likelihood: New Challenges from Modern Applications (i-like)”.  
01 September 2013 to 31 August 2015
- 2014–2015 **Teaching**, *School of Mathematics, University of Bristol, UK*, Example classes for courses on Probability, Statistics, and Linear Algebra & Geometry.  
January 2014 to June 2015
- 2012–2013 **Temporary research conductor**, *Department of Engineering, University of Cambridge, UK*, Research on algorithmic development for multi-target tracking model calibration and testing.  
4 December 2012 to 28 February 2013
- 2011–2013 **Teaching**, *University of Cambridge, UK*, (a) Department of Pure Maths and Math Statistics: Supervised 1B Markov Chains, and currently giving example classes on Part III Time Series and Markov Chains; (b) Department of Engineering: supervised 3M1 Mathematical Methods and gave demonstration in Computing 1B.
- 2008–2008 **Academic visitor**, *Signal Processing and Telecommunications Laboratory, University of Cambridge, UK*, hosted by Prof. W. Fitzgerald, worked with Dr. A. Taylan Cemgil.  
1 August 2008 to 17 September 2008
- 2007–2009 **Teaching Assistant**, *Boğaziçi University, Department of Electrical and Electronics Engineering, Turkey*, helped teaching courses on Signal Processing and Telecommunications.  
December 2007 to June 2009
- 2007–2009 **Academic researcher**, *in the project “Time Series Modelling for Bayesian Source Separation” funded by the Scientific and Technical Research Council of Turkey, Boğaziçi University Signal Processing Laboratory, Turkey.*  
September 2007 to June 2009

## Talks & presentations

- August 2015 **SMC Conference in Paris, ENSAE, Paris, France**, *AIS MCMC for parameter estimation in HMMs*, poster.
- June 2015 **Workshop on Bayesian Inference for Big Data (BIBiD 2015), University of Oxford, Oxford, UK**, *Facilitating the penalty method for MCMC with large data*, talk.
- May 2015 **i-like Workshop, University of Bristol, Bristol, UK**, *On an alternative class of exact-approximate MCMC algorithms*, talk.
- February 2015 **Department of Statistics, University of Oxford, Oxford, UK**, *On an alternative class of exact-approximate MCMC algorithms*, talk.
- February 2015 **Department of Statistics, University College London, London, UK**, *On an alternative class of exact-approximate MCMC algorithms*, talk.
- December 2014 **Department of Mathematics, University College London, London, UK**, *On the usefulness of asymmetric acceptance ratio Metropolis-Hastings updates*, talk.
- July 2013 **Department of Electrical and Electronics Engineering, Boğaziçi University, İstanbul, Turkey**, *Parameter estimation in Hidden Markov Models*, talk.
- March 2013 **Department of Statistical Science, University College London, UK**, *Approximate Bayesian Computation for Maximum Likelihood Estimation in Hidden Markov Models*, talk.
- Sept 2012 **Workshop on Recent Advances in Sequential Monte Carlo, Warwick, UK**, *Approximate Bayesian Computation for Maximum Likelihood Estimation in Hidden Markov Models*, talk.
- April 2012 **SuSTaIn 2012, Bristol, UK**, *ABC Maximum Likelihood Estimation for Hidden Markov Models with intractable likelihoods*, poster.
- June 2010 **ISBA 2010 World Meeting, Valencia, Spain**, *Offline and online expectation-maximisation via forward smoothing in changepoint systems*, poster.

## ■ Honours

- 2012 Travel grant awarded by the conference Fusion 2012
- 2011 Smith-Knight & Rayleigh-Knight Prize (with many other winners)
- 2009 PhD scholarship awarded by Cambridge Statistics Initiative for three years
- 2009 MAN Group PhD award for three years
- 2002 Ranked 10th in the National University Entrance Exam (among 1,600,000 candidates)

## ■ Computer skills

Coding R (beginner), MATLAB, C.