Summer school on Advanced Bayesian Methods

23-27 September 2019

3rd announcement

Interuniversity Institute for Biostatistics
and statistical Bioinformatics

The Interuniversity Institute for Biostatistics and statistical Bioinformatics organizes for the third time a summer school on Bayesian methods. During one week, two courses will be taught on specific topics in Bayesian methodology. The focus is on Bayesian methods that are relevant for the applied statistician. Special attention will be devoted to novel statistical methodology.

In the **third edition of the summer school**, the following two courses will be organized in Leuven from **23 to 27 September 2019**:

- **Two-day course (23-24 September) on Advanced Simulation and Numerical Methods for Bayesian Statistics** by Dr. Mark Girolami (Imperial College, London and The Alan Turing Institute, UK)
- **Three-day course (25-27 September) on Bayesian Variable Selection Methods** by Dr. Ioannis Ntzoufras (Athens University of Economics and Business, Greece)

The target audience of summer school are statisticians and/or epidemiologists with a sound background in statistics, but also with background in Bayesian methodology. In both courses, practical sessions are organized, so participants are asked to bring along their laptop with the appropriate software (to be announced) pre-installed.

The registration costs for the courses are:

Two-day course		Three-day course	
I-Biostat member	€ 50	I-Biostat member:	€ 50
PhD student	€ 200	PhD student:	€ 250
Quetelet member	€ 200	Quetelet member	€ 250
Academic	€ 300	Academic:	€ 400
ISBA member	€ 300	ISBA member:	€ 400
Research institute	€ 300	Research institute:	€ 400
Industry	€ 900	Industry:	€ 1200

Note that one is registered to the course, **ONLY when the registration costs have been paid**. The **deadline for registration is August 31, 2019**.

More information about the courses and practicalities (registration, location, transportation, etc.) can be found on https://ibiostat.be/seminar/summerschool2019

Please reserve already this week in September 2019!

For additional questions, please contact Kirsten Verhaegen (kirsten.verhaegen@kuleuven.be).

Supported by

Advanced Simulation and Numerical Methods for Bayesian Statistics

By Dr. Mark Girolami (Imperial College, London and The Alan Turing Institute, UK)

This short course is intended to provide an introduction to the stochastic computation methods available to support statistical inference over Bayesian models. Such models appear in all areas of Statistical Science Biostatistics including Machine Learning and Data Science. The class Monte Carlo methods based on simulation of Markov chains will be introduced as well as approximate approaches such as the variational framework. Advanced Monte Carlo methodologies for variance reduction and enhanced convergence of estimators will also be presented including the emerging classes of Stein based approaches.

Bayesian Variable Selection Methods

by Professor Ioannis Ntzoufras (Athens University of Economics and Business)

This short course is intended to provide an introduction to Bayesian variable selection methods. The theoretical aspects are complemented with practical examples using MCMC methods via R and MCMC sampling software (such as OpenBUGS and JAGS). The theoretical part will introduce the notions of Bayes Factors, posterior model odds and posterior model probabilities. Focus will be given in Objective Bayes model comparisons with detailed description to the popular prior formulations (such as the g-prior and the hyper-g prior) and the criteria, which ensure a well implemented variable selection method. The theory will conclude with a presentation of the Bayesian version of LASSO methods. The practical approach will describe the conjugate case, MCMC methods for the model space (using R and associated packages) in normal linear regression. Also the implementation in non-conjugate case using variable selection MCMC methods will be also presented using WinBUGS.

The course is intended for statisticians and practitioners who wish to understand and implement modern Bayesian variable selection techniques to practical problems. Participants are advised to bring their own laptops for the lab sessions of the course.

Biosketches course instructors

Mark Girolami (Imperial College, London and The Alan Turing Institute, UK)

Mark Girolami holds the Chair of Statistics within the Department of Mathematics at Imperial College London where he is also Professor of Computing Science in the Department of Computing. He is an adjunct Professor of Statistics at the University of Warwick and is Director of the Lloyd's Register Foundation Programme on Data Centric Engineering at the Alan Turing Institute where he served as one of the original founding Executive Directors. He is an elected member of the Royal Society of Edinburgh and previously was awarded a Royal Society - Wolfson Research Merit Award. Professor Girolami has been an EPSRC Research Fellow continuously since 2007 and in 2018 he was awarded the Royal Academy of Engineering Research Chair in Data Centric Engineering. His research focuses on applications of mathematical and computational statistics.

Ioannis Ntzoufras (Athens University of Economics and Business)

Ioannis Ntzoufras obtained his B.Sc. in Statistics and Insurance Science from the University of Piraeus (Greece) and his M.Sc. in Statistics with Applications in Medicine from the University of Southampton (UK). He then completed a PhD program in Bayesian Statistics at Athens University of Economics and Business (Greece). He then worked as a Lecturer at the University of Aegean for 3,5 years. In 2004, he got the position of assistant Professor at the Department of Statistics of Athens University of Economics and Business where he is working until today. He currently holds the position of a Professor in Statistics since 2016.

Professor Ntzoufras is mainly working in the areas of Bayesian modeling, computation, Bayesian variable and model selection. His research interests also include the topics of Bayesian methods for categorical data and discrete graphical models, Sports Analytics and Psychometrics. Ioannis Ntzoufras is currently a leading member of the Computational and Bayesian Lab and the Sports Analytics Group of Athens University of Economics and Business.