ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ΤΜΗΜΑ ΣΤΑΤΙΣΤΙΚΗΣ

ΠΕΜΠΤΗ 19/6/2014
12:00 – 13:00

ΑΙΘΟΥΣΑ 607, 6ος ΟΡΟΦΟΣ,
ΚΤΙΡΙΟ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
(ΕΥΕΛΠΙΔΩΝ & ΛΕΥΚΑΔΟΣ)

Oliver Ratmann
Imperial College London

Statistical modelling of summary values leads to accurate Approximate Bayesian Computations

ΠΕΡΙΛΗΨΗ (ΣΤΑ ΑΓΓΛΙΚΑ)

Approximate Bayesian Computation (ABC) methods rely on asymptotic arguments, implying that parameter inference can be systematically biased even when sufficient statistics are available. We propose to construct the ABC accept/reject step from decision theoretic arguments on a suitable auxiliary space. This framework, referred to as ABC*, fully specifies which test statistics to use, how to combine them, how to set the tolerances and how long to simulate in order to obtain accuracy properties on the auxiliary space. Akin to maximum-likelihood indirect inference, regularity conditions establish when the ABC* approximation to the posterior density is accurate on the original parameter space in terms of the Kullback-Leibler divergence and the maximum a posteriori point estimate. Fundamentally, escaping asymptotic arguments requires knowledge of the distribution of test statistics, which we obtain through modelling the distribution of summary values, data points on a summary level. Synthetic examples and an application to time series data of influenza A (H3N2) infections in the Netherlands illustrate ABC* in action. (**http://arxiv.org/abs/1305.4283**)

ATHENS UNIVERSITY OF ECONOMICS & BUSINESS
DEPARTMENT OF STATISTICS

Thursday 19/6/2014
12:00 – 13:00

ROOM 607, 6th FLOOR,
POSTGRADUATE STUDIES BUILDING
(EVELPIDON & LEFKADOS)

Oliver Ratmann
Imperial College London

Statistical modelling of summary values leads to accurate Approximate Bayesian Computations

ABSTRACT

Approximate Bayesian Computation (ABC) methods rely on asymptotic arguments, implying that parameter inference can be systematically biased even when sufficient statistics are available. We propose to construct the ABC accept/reject step from decision theoretic arguments on a suitable auxiliary space. This framework, referred to as ABC*, fully specifies which test statistics to use, how to combine them, how to set the tolerances and how long to simulate in order to obtain accuracy properties on the auxiliary space. Akin to maximum-likelihood indirect inference, regularity conditions establish when the ABC* approximation to the posterior density is accurate on the original parameter space in terms of the Kullback-Leibler divergence and the maximum a posteriori point estimate. Fundamentally, escaping asymptotic arguments requires knowledge of the distribution of test statistics, which we obtain through modelling the distribution of summary values, data points on a summary level. Synthetic examples and an application to time series data of influenza A (H3N2) infections in the Netherlands illustrate ABC* in action. (**http://arxiv.org/abs/1305.4283**)