

NCSE July Meeting

11th – 15th July 2011

University of Bath

Training workshop abstracts

1 day workshop

Professor Simon Wood

Semi-parametric GLMs with mgcv: beyond GAMs.

This course will cover how the penalized GLM framework implemented in mgcv allows use of models well beyond the original GAM framework. Topics will include: mixed model extensions, spatial and temporal autocorrelation, functional predictors, posterior simulation and large datasets, as well as reviewing the smoothers now available for use as model components (e.g. thin-plate, tensor product, p-splines, cyclic, splines on the sphere, adaptive and Duchon's generalized thin-plate). It would be an advantage to have some familiarity with basic use of gam in R package mgcv in advance of the course.

½ day workshop

Dr Janine Illian

Spatial models in Ecology

Integrated nested Laplacian approximation (INLA) facilitates the fitting of a large range of complex statistical models by dramatically reducing computation time. This workshop discusses how spatial models that are relevant for ecological data sets may be fitted with INLA.

There will be a strong focus on the analysis of spatial point patterns since realistically complex models for these have previously been computationally intractable. We show how complex models may be fitted to spatial patterns formed by the locations of individuals in space along with their properties and covariates.

A number of examples will be looked at in a hands-on practical session with the software R-INLA.

½ day workshop

Dr Lorenzo Milazzo

Scientific Computing: An introduction to concepts, techniques, and tools for algorithm design.

Designing efficient algorithms is considered to be a challenging task. R is one of the main high-level programming languages used in Statistical Computing. The aim of this introductory level workshop is to provide practical guidelines for designing and implementing efficient algorithms in R. The first part of the workshop will focus on some key issues such as data processing, definition and use of data structures, memory management, algorithm design, profiling and optimization of algorithms.

In the second part, more advanced topics will be covered, such as parallel computing in R and accuracy of calculations.

During the workshop, source codes written in R will be used as examples.