Wiener Biometrische Sektion
der Internationalen Biometrischen Gesellschaft
Region Österreich – Schweiz

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Einladung zum

Biometrischen Kolloquium

am Freitag, dem 11. Jänner 2002, 15:00 Uhr

im Seminarraum des
Instituts für Medizinische Computerwissenschaften
Ebene 5C (Eingangsebene Gürtel)
Währinger Gürtel 18-20, 1090 Wien

Es spricht Herr Prof. David Firth Nuffield College, University of Oxford zum Thema:

Maximum likelihood estimates: bias, finiteness, shrinkage

Barbara Schneider
Präsidentin

Thomas Waldhör
Sekretär

Abstract:

In regular parametric models the maximum likelihood estimator has asymptotic bias of order 1/n. Various bias-reduction methods are available; but of course bias reduction is not always desirable. In some happy situations, though, bias reduction is accompanied also by reduction in variance. This talk will focus on two such situations: logistic regression, and models (the simplest of which is the Jukes-Cantor model) for the estimation of evolutionary distance between species based on DNA sequence data.

A further common feature of both logistic regression MLEs, and estimates of evolutionary distance, is that they can be infinite-valued. In the case of logistic regression this typically manifests itself in the failure of iterative algorithms to converge, and/or the reporting, by computer programs, of very large estimates of coefficients and standard errors whose values are determined arbitrarily by the algorithm's stopping rule. In the literature on evolutionary distances, a pair of sequences for which the distance estimate is infinite is sometimes called an "inapplicable case", and causes difficulties for distance-based tree reconstruction methods. It will be shown how, in both cases, a simple bias reduction method based on penalized likelihood produces finite estimates with good properties.

Other aspects that will be discussed briefly are: the connection with other shrinkage methods based on "flattening constants"; "pseudo-Bayesian" interpretation; and tests and confidence regions based on penalized likelihoods.