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题 目: CONCEPT OF DENSITY FOR FUNCTIONAL DATA

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摘要: The data in a sample of time series, for example graphs of average temperature or average rainfall, are often considered to be different realisations of the series. As for any dataset we can ask which realisations lie in the tails, and what realisations lie towards the centre (for example, near the mode) of the distribution. We will discuss the probability density for time-series realisations, or for functional data. While it is possible to restrict attention to a ball of given nonzero radius, the conventional concept of a probability density function, however well defined, is not least because there is no natural analogue of Lebesgue measure in a functional space. A meaningful surrogate for density, defined as the average value of the logarithms of the density over a given dimension. This 'density approximation' is readily estimable from data, and leads directly to a number of particular results. In particular, the mode of a distribution of random functions is well defined, even if the density is not. In particular, component scores is of independent interest; it reveals shape differences that have not previously been noted.

报告人简介: Prof. Hall is currently a professor and ARC Federation Fellow at the Department of Mathematics and also has a joint appointment at University of California Davis. He previously held a professorial position at the Australian National University.

Prof. Hall is among the world's most prolific and highly-cited authors in both probability and statistics. He has over 100 publications as of January 2008. He has made very substantial and important contributions to the theory of statistics and resampling: the bootstrap method, smoothing, density estimation, and bandwidth selection. His research interests include economics, engineering, physical science and biological science. Prof. Hall has also made contributions to the theory of measurement using fractals. In probability theory he has made many contributions to limit theory. His paper "Theoretical comparison of bootstrap confidence intervals" (*Annals of Statistics*, 1988) has been cited over 1000 times.