

UNIVERSITY OF SYDNEY

SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar Series - 2002

Friday August 16, 2.00pm., Carslaw Lecture Room 173 (level 1)

Denoising Multivariate Functions.

Professor Dominique Picard

Université de Paris VII

Abstract

Our aim is to study the multivariate setting in nonparametric regression models. Typical applications include image denoising (the image being considered as a function of two variables).

We will focus on possible rates of convergence which depend on the regularity of the underlying function. Due to the curse of dimensionality, defining the regularity of the target function is a crucial problem: selectivity to orientation (isotropy or anisotropy of the image), spatial homogeneity or inhomogeneity.

In the one-dimensional setting, it is known that spatial inhomogeneity gives rise to essentially two different regions (dense and sparse) with two specific rates of convergence.

The question in higher dimension is more difficult. Will there be a difference between the isotropic and anisotropic setting? How many regions spatial inhomogeneity will generate in a d -dimensional setting? What are the corresponding rates of convergence?

This is a joint work with professor Gérard Kerkycharian (Université Paris X-Nanterre)

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