



Lothar-Collatz-Kolloquium für Angewandte Mathematik

Donnerstag, den 4. Mai 2017, um 17:15 Uhr, im Hörsaal 5

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Approximation Properties of Reproducing Kernel Hilbert Spaces and their Applications

Zusammenfassung/Abstract:

Reproducing Kernel Hilbert Spaces (RKHS) play an important role in several branches of mathematics including statistical learning theory and stochastic processes. In this talk we will investigate approximation properties of RKHS with the help of certain interpolation spaces. Here the main tool is a generalized version of the classical Mercer theorem, which makes it possible to describe these interpolation spaces by weighted sequence spaces. We then discuss two applications of the general theory: First we show how it leads to generalized Karhunen-Loeve expansions of stochastic processes, which in turn can be used to investigate both their path behavior and our ability to approximate their paths in strong norms. Second, we derive learning rates for kernel-based learning methods and discuss how these rates improve existing ones.

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