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# Mini-course on Kernel Techniques\*

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## **Abstract**

Kernel methods are among the most influential and widely-applied tools, with significant impact on virtually all areas of machine learning and statistics. Their versatility stems from the function class associated to a kernel called reproducing kernel Hilbert space (RKHS) which shows tremendous success in modelling complex relations. This mini-course will provide a self-contained introduction to the area of kernels including their construction from different perspectives, useful rules to design new kernels from existing ones, properties of the RKHS inherited from the kernel, the representer theorem underlying the computational tractability of kernel techniques, applications of kernels in supervised learning (classification and regression).

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