Reproducing kernel Banach spaces – A new construction and applications

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We present a generalization of Lax-Milgram's theorem and use it to demonstrate a new construction of Reproducing Kernel Banach Spaces and their properties.

New kind of variational principles in a Banach space are derived, after embedding in a suitable Reproducing Kernel Banach space.

Several applications are presented to differentiability of Lipschitz functions, statistical learning theory and data analysis