Low-rank approximation of high-dimensional functions in isotropic and anisotropic Sobolev spaces

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Tensor approximation schemes provide a powerful tool to approximate high-dimensional problems. In order to clarify which problems can efficiently be approximated by tensor approximation schemes, we analyze in this talk the approximation power of such schemes when applied to high-dimensional functions in the continuous setting. To this end, we assume that the function to be approximated lies either in an isotropic Sobolev space or an anisotropic Sobolev space, possibly equipped with dimension weights. We apply successively the truncated singular value decomposition in order to discuss the cost when approximating the function under consideration in the continuous analogues of tensor formats such as the Tucker tensor format or the tensor train format.

References

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