The max-product generalized sampling operators: convergence and quantitative estimates.


Summary: In this paper, we study the max-product version of the generalized sampling operators based upon a general kernel function. In particular, we prove pointwise and uniform convergence for the above operators, together with a certain quantitative Jackson-type estimate based on the first order modulus of continuity of the function being approximated. The proof of the proposed results are based on the definition of the so-called generalized absolute moments. By the proposed approach, the achieved approximation results can be applied for several type of kernels, not necessarily duration-limited, such as the sinc-function, the Fejér kernel and many others. Examples of kernels with compact support for which the above theory holds can be given, for example, by the well-known central B-splines.

MSC:

41A25 Rate of convergence, degree of approximation
41A05 Interpolation in approximation theory
41A30 Approximation by other special function classes
47A58 Linear operator approximation theory
94A20 Sampling theory in information and communication theory

Keywords:
quantitative Jackson-type estimate; max-product generalized sampling operators; modulus of continuity; convergence; kernel

Software:
GaussQR; IPOL; SplinePak

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References:


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