

ON A PROBLEM OF EXTENDING FUNCTIONS

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In 1965, Schoenberg proposed a piecewise polynomial generalization of Bernstein's operator preserving its variation-diminishing properties. The traditional choice of coalescing knots at the endpoints of the basic interval $[0, 1]$ leads to an operator mapping $\mathbb{R}^{[0,1]}$ into itself.

In a recent work, Gonska et al. consider so-called *floating uniform Schoenberg splines*. These arise under application of a Schoenberg-type operator based on purely equidistant knots. This method entails certain benefits over the classical approach, in particular a superior order of simultaneous approximation. However, the construction generally relies on data given outside the interval $[0, 1]$.

Certainly, one cannot expect this requirement to be met in all applications. Nevertheless, Gonska et al. proved that it can be successfully circumvented employing an extrapolation technique considered by Hestenes.

In the present talk, we treat variants of this constructive solution to the problem of extending functions and discuss new quantitative statements in terms of classical moduli of smoothness.