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GRAPHIC APPLICATIONS OF SOME INTERPOLATING WEIGHTED MEAN FUNCTIONS

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ABSTRACT. Our aim in the present paper is to prove that some results about interpolating weighted mean functions are a useful tool for the design of curves.

In [**1**], a method is considered to construct weighted mean functions, with interpolation property. A few examples are given; they include the Shepard formula.

In the present paper we introduce the weights of interpolating means in a well-known Walsh theorem. In this way we can impose a finite number of interpolation constraints to an approximant (for example, a Bernstein-Bezier curve) with a preassigned error.

In [**5**] a class of piecewise weighted mean functions is introduced for the interpolation of a finite set of real values $f_i = f(x_i)$, $i = 1, \dots, n$, given at the points $x_1 < \cdots < x_n$. At any point $x \in [x_i, x_{i+1}]$, $i = 1, \dots, n-1$, the interpolant is a weighted mean of the values f_i and f_{i+1}. These piecewise weighted mean functions are at least C^1 in $[x_1, x_n]$, satisfy a variation diminishing property and preserve positivity and monotonicity of the sequence $f_1, \dots, f_n$. In the present paper we use them to solve a histopolation problem.

0. Introduction. In the present paper we consider some graphic applications of interpolating weighted mean functions [**1, 5**], which interpolate a set of real values $f_i = f(x_i)$, $i = 1, \dots, n$ at distinct points $x_1, \dots, x_n \in I \subset R$.

In the first section we introduce weights of interpolating means in a Walsh theorem, in order to get a hybrid scheme for simultaneous approximation and interpolation with a preassigned error.

In the second section we recall some properties of piecewise weighted mean functions, which include functional precision, regularity class in $[x_1, x_n]$, variation diminishing. A further property is that positivity and monotonicity of the sequence $f_1, \dots, f_n$ are preserved. In the third

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