MASCOT-NUM 2019

WYNN Henry

Abstract

Rational Becker-Weispfennig interpolation

The method of interpolation over an arbitrary experimental design based on Groebner bases is now well established and forms a sub-area covering also identifiability and aliasing problems. Earlier work of the authors [1] shows how the ideas can be extended to interpolation over algebraic manifolds exploiting the work of Becker and Weispfenning [2]. The later construction can be extended to rational interpolation by selecting the basis elements which are linear in the response variable and solving. Examples are given some of which are close in spirit to the more familiar ideas of NURBS: non uniform rational Beta splines. Smooth extensions are discussed briefly.

References:

[1] Maruri-Aguilar, H. and Wynn, H.P., 2008. Generalised design: interpolation and statistical modelling over varieties. *Geometric and Algebraic Methods in Statistics (eds. P. Gibilisco, E. Riccomagno, MP Rogantin and HP Wynn), Cambridge University Press.*

[2] Becker, T. and Weispfenning, V., 1991, June. The Chinese remainder problem, multivariate interpolation, and Gröbner bases. In *Proceedings of the 1991 international symposium on Symbolic and algebraic computation* (pp. 64-69). ACM.