

## عنوان مقاله:

Fast Precise and Smooth Approach to Calculate Parameter of NURBS by Arc-Length

## محل انتشار:

فصلنامه بین المللی مهندسی مکاترونیک، برق و کامپیوتر، دوره 12، شماره 45 (سال: 1401)

تعداد صفحات اصل مقاله: 7

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## خلاصه مقاله:

NURBS is the standard model of CNC interpolation calculation at present. It is the basis of CNC system position and speed calculation. Especially, the algorithm to inverse calculate parameter of arc length determines the advantages and disadvantages of CNC speed planning. Due to the lack of analytical calculation relationship between the arc length of NURBS curve and its parameters, it is impossible to accurately calculate parameters through the arc length, which makes it difficult to accurately predict the interpolation points in speed planning. To solve the above problems, a high-precision inverse calculation method of NURBS curve parameters from arc length is proposed. Based on the rapid calculation of arc length by adaptive Simpson integral method, the corresponding relationship between arc length and parameters is established by weighting, and then the high-precision inverse calculation of arc length to parameters is realized by proportional optimization results. The example of curve speed planning shows that the algorithm not only has higher accuracy than other methods, but also can quickly calculate the parameters corresponding to any arc length, and can meet the requirements of high-speed and high-precision interpolation for high-performance CNC.

## کلمات کلیدی:

NURBS, CNC interpolation, Parameter back calculation, Speed planning

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1841827>

