

Type-2 Intuitionistic Interpolation Cubic Fuzzy Bézier Curve Modeling using Shoreline Data

ABSTRACT

The notion of fuzzy sets is fast becoming a key instrument in defining the uncertainty data and has increasingly been recognised by practitioners and researchers across different disciplines in recent decades. The uncertainty data cannot be modeled directly and this causes hindrance in obtaining accurate information for analysis or predictions. Hence, this paper contributes to another approach in which an application of type-2 intuitionistic fuzzy set (T-2IFS) in geometric modeling onto complex uncertainty data where the data are defined using the type-2 fuzzy concept. T-2IFS is the generalized forms of fuzzy sets, intuitionistic fuzzy sets, interval valued fuzzy sets, and interval-valued intuitionistic fuzzy sets. Based on the concept of T2IFS, type-2 intuitionistic fuzzy point (T-2IFP) is defined in order to generate a type-2 intuitionistic fuzzy control point (T-2IFCP). Following, the T-2IFCP will be blended with the Bernstein blending function through the interpolation method, resulting to a type-2 intuitionistic interpolation cubic fuzzy Bézier curve. Shoreline data is used as the data and further verifies that the model can be conceivably accepted. In conclusion, the proposed methods are reliable and can be expanded to many other areas.