

Generalized Fuzzy Linguistic Bicubic B-Spline Surface Model for Uncertain Fuzzy Linguistic Data

ABSTRACT

A fuzzy linguistic data set that is uncertain is difficult to analyze and describe in the form of a smooth and continuous generic figure. Therefore, the study aims to develop a new model of a B-spline surface using a different approach of a crisp and fuzzy linguistic point relation with three types of linguistic function: low L , medium M_i and high H . These linguistic functions are defined first to introduce the fuzzy linguistic point relation. Then, a new algorithm of the fuzzy linguistic bicubic B-spline surface model is presented to convert fuzzy linguistic data into fuzzy linguistic control points. In addition, a numerical example of fuzzy linguistic data is considered at the end of this study to visualize the suggested model. Thus, the relation between the fuzzy linguistic data points can be analyzed to present another area of knowledge in which symmetry phenomena occur. The symmetry here plays an important role in solving the uncertain fuzzy linguistic data problem by using the suggested model.