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# United States Patent [19]

Meek et al.

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[54] **METHOD AND SYSTEM FOR REPRESENTATION AND USE OF SHAPE INFORMATION IN GEOGRAPHIC DATABASES**

[75] Inventors: **James A. Meek**, Palatine, Ill.; **Richard A. Ashby**, Blue River, Wis.; **David S. Lampert**, Highland Park, Ill.

[73] Assignee: **Navigation Technologies Corporation**, Rosemont, Ill.

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[58] **Field of Search** ..... 707/1–204

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*Primary Examiner*—Thomas G. Black

*Assistant Examiner*—John Gladstone Mills, III

*Attorney, Agent, or Firm*—Frank J. Kozak; Lawrence M. Kaplan

[57] **ABSTRACT**

A system and method for storing data in a computer-readable database to represent curved geographic features. The database can be used in a navigation system. A computable function is used to define a curved line that represents the curved geographic feature. The computable function may be a polynomial equation whose shape is defined by its coefficients. In one embodiment, the polynomial equation is a type of spline curve, in particular a Bezier curve whose shape is defined by control points. The coefficients of the polynomial equation are associated with data representing the curved geographic feature. In the case in which the polynomial equation is a Bezier curve, the control points for generating the Bezier curve are associated with the data representing the curved geographic feature. These control points are stored in the database and are used in displaying the curved geographic feature. Use of a computable function to represent curved geographic features and storing parameters to be used by the computable function has the potential for significantly reducing the storage requirements for representing curved geographic features in a database. According to a further aspect, data identifying the normalized control points are stored in a data array and references into the data array are associated with data representing the curved geographic features, thereby enabling curved geographic features to be represented in space efficient manner.

**14 Claims, 6 Drawing Sheets**