Article Improvements

Current article (submitted manuscript)

Anderson Chaves Carniel, Ricardo Rodrigues Ciferri, and Cristina Dutra de Aguiar Ciferri, “The VagueGeometry Abstract Data Type”.

Previous article (preliminary version)

[1] Anderson Chaves Carniel, Ricardo Rodrigues Ciferri, and Cristina Dutra de Aguiar Ciferri, "Embedding Vague Spatial Objects into Spatial Databases using the VagueGeometry Abstract Data Type", *Proceedings of the Brazilian Symposium on Geoinformatics*, 2015, pp. 233-244.

Summary of the Differences

In this article, we propose the VagueGeometry abstract data type, a novel abstract data type (ADT) to handle vague spatial objects based on the Vague Spatial Algebra (VASA). VASA is an exact model that formally defines vague spatial data types and their operations. A preliminary version of this work was presented in [1]. In this article, we introduce several novel contributions, as follows.

- We discuss the related work (in Section 2) by adding a table that enables a better and clearer comparison of the current related work with our proposal.
- We depict graphical representations of concepts involving the representation of vague spatial objects by using the VagueGeometry ADT, as described in Section 4.1.
- We introduce examples of instance of the following textual representations: Vague Well-Known Text and Vague Geographic JSON. They are showed in Section 4.1.
- We add new VagueGeometry operations and show the SQL signatures of all the operations, as described in Section 4.2.

- We discuss SQL operators of the VagueGeometry by using formal definitions and truth tables, as described in Section 4.3.
- We add a running example that shows how to use the VagueGeometry ADT, as described in Section 4.4. Several examples are showed, which include the following SQL commands: CREATE TABLE, INSERT, and SELECT.
- We analyze the performance of the VagueGeometry ADT in the query processing for vague spatial joins, as described in Section 6.3.
