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MSc Thesis

Topic: A dynamic website for a Temporal Probabilistic Database Implementation

Temporal Probabilistic Databases (TPDBs) involve a great amount of complexity in the way that queries are performed and in the way they are reduced to conventional SQL statements. An extension of Postgres being able to perform queries on TPDBs has been created.

The goal of this project is to create a dynamic website in order to guide users through this implementation giving them a chance to experiment by performing queries, on sample datasets or datasets of their choice, and by studying and understanding the corresponding results.

The functionalities of this website should include:

- a. Performing queries on the existing Postgres Implementation, using conventional SQL statements, that is without having to think about the adaptation procedure due to the existence of probability and time [2, 3]
- b. Presentation of the results and of the chosen query plan
- c. On demand computation of the probability of the whole relationship or of a single tuple [4]
- d. On demand demonstration of the lineage of a chosen tuple in the form of a tree where the nodes will correspond to boolean operations and the leaves to base tuples. [5, 1]

Tasks

1. Website Prototyping with the help of online software
2. Requirement Analysis
3. Implementation of the website
4. Evaluation based on the feedback given by a number of users
5. Written Thesis (approximately 50-pages)
6. 25-min presentation of the results in a group meeting

References

- [1] Christoph Buchheim, Michael Jünger, and Sebastian Leipert. Drawing rooted trees in linear time. *Software: Practice and Experience*, 36, 2006.
- [2] Anton Dignös, Michael H. Böhlen, and Johann Gamper. Temporal alignment. In *SIGMOD Conference*, pages 433–444, 2012.
- [3] Anton Dignös, Michael H. Böhlen, and Johann Gamper. Query time scaling of attribute values in interval timestamped databases. In *ICDE*, 2013.
- [4] Anish Das Sarma, Martin Theobald, and Jennifer Widom. Exploiting lineage for confidence computation in uncertain and probabilistic databases. In *ICDE*, 2008.
- [5] Roberto Tamassia. *Handbook of Graph Drawing and Visualization (Discrete Mathematics and Its Applications)*. Chapman & Hall/CRC, 2007.

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