



BINLI: An Ontology-Based Natural Language Interface for Multidimensional Data Analysis

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ABSTRACT

Current technology facilitates access to the vast amount of information that is produced every day. Both individuals and companies are active consumers of data from the Web and other sources, and these data guide decision making. Due to the huge volume of data to be processed in a business context, managers rely on decision support systems to facilitate data analysis. OLAP tools are Business Intelligence solutions for multidimensional analysis of data, allowing the user to control the perspective and the degree of detail in each dimension of the analysis. A conventional OLAP system is configured to a set of analysis scenarios associated with multidimensional data cubes in the repository. To handle a more spontaneous query, not supported in these provided scenarios, one must have specialized technical skills in data analytics. This makes it very difficult for average users to be autonomous in analyzing their data, as they will always need the assistance of specialists. This article describes an ontology-based natural language interface whose goal is to simplify and make more flexible and intuitive the interaction between users and OLAP solutions. Instead of programming an MDX query, the user can freely write a question in his own human language. The system interprets this question by combining the requested information elements, and generates an answer from the OLAP repository.

KEYWORDS

NLP; BI; Ontology; Question Answering

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References

- [1] W. H. Inmon, " Building the Data Warehouse," QED Technical Publishing Group, Wellesley, 1992.
- [2] R. Bouman and J. van Dongen, " Pentaho Solutions: Business Intelligence and Data Warehousing with Pentaho and MySQL," Wiley Publishing, Inc., Hoboken, 2009.
- [3] R. Kimball and M. Ross, " The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling," 2nd Edition, Wiley Computer Publishing, New York, 2002.
- [4] J. Silva and J. Saias, " Olap em ambito hospitalar: Transforma??o de dados de enfermagem para análise multidimensional," In Actas das 2as Jornadas de Informática da Universidade de Évora JIUE'2011, Évora, 2011, pp. 77-85.
- [5] C. Monz, " From Document Retrieval to Question Answering," Ph.D. Thesis, University of Amsterdam, Amsterdam, 2003.
- [6] N. Kuchmann-Beauger and M.-A. Aaufaure, " A Natural Language Interface for Data Warehouse Question Answering," 16th International Conference on Applications of Natural Language to Information Systems—NLDB 2011, Alicante, 28-30 June 2011, pp. 201-208.
- [7] Y. E. Ioannidis, " From Databases to Natural Language: The Unusual Direction," Conference on

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- [8] M. Owda, Z. Bandar and K. A. Crockett, " ConversationBased Natural Language Interface to Relational Databases," Proceedings of the 2007 IEEE/WIC/ACM International Conference on Web Intelligence and International Conference on Intelligent Agent Technology Workshops, Silicon Valley, 5-12 November 2007, pp. 363-367.
- [9] R. A. Frost and R. J. Fortier, " An Efficient Denotational Semantics for Natural Language Database Queries," 12th International Conference on Applications of Natural Language to Information Systems, Paris, 27-29 June 2007, pp. 12-24.
- [10] F. A. El-Mouadib, Z. S. Zubi, A. A. Almagrous and I. ElFeghi, " Interactive Natural Language Interface," WSEAS Transactions on Computers, Vol. 8, No. 4, 2009, pp. 661680.
- [11] Y. Y. Li, H. H. Yang and H. V. Jagadish, " Nalix: A Generic Natural Language Search Environment for XML Data," ACM Transactions on Database Systems, Vol. 32, No. 4, 2007.
- [12] H. Q. Hu, " A Study on Question Answering System Using Integrated Retrieval Method," Ph.D. Thesis, The University of Tokushima, Tokushima, 2006.
- [13] C. Amaral, A. Cassan, H. Figueira, A. Martins, A. Mendes, P. Mendes, J. Pina and C. Pinto, " Priberam' s Question Answering System in qa@clef 2008," CLEF Workshop, 2008, pp. 337-344.
- [14] J. Saias and P. Quaresma, " The Senso Question Answering System at qa@clef 2008," Technical Report, CLEF Workshop, 2008.
- [15] R. Thollot, N. Kuchmann-Beauger and M.-A. Aaufaure, " Semantics and Usage Statistics for Multi-Dimensional Query Expansion," 17th International Conference of Database Systems for Advanced Applications, Busan, 15-18 April 2012, pp. 250-260.
- [16] J. Saias and P. Quaresma, " Semantic Networks and Spreading Activation Process for QA Improvement on Text Answers," Proceedings of the 8th Brazilian Symposium in Information and Human Language Technology— STIL2011, Cuiabá, 24-26 October 2011.
- [17] B.-K. Park and I.-Y. Song, " Incorporating Text Olap in Business Intelligence," Business Intelligence Applications and the Web: Models, Systems and Technologies, IGI Global, 2012, pp. 77-101.