

Application of data mining technology to optimize the city transport network

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Abstract

© 2016 IEEE. The article considers the experience of OLAP-technology in solving optimization problems of the city transport system. The authors proposed a conceptual decision support scheme to optimize the transport-road network parameters. The developed system provides the possibility of intelligent analysis and decision-making based on OLAP-technologies and simulation models.

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Keywords

intelligent analysis, OLAP, simulation modeling, transport network

References

- [1] Sustainable Transport and Air Pollution. <http://www.unep.org/resourceefficiency/Policy/ResourceEfficientCities/FocusAreas/SustainableTransportandAirPollution/tabid/101667/Default.aspx>
- [2] World Health Organization. Global status report on road safety, 2015: Summary. Geneva: WHO Press. 2015. 16 p.
- [3] I. Makarova, et al., "Urban transport system management in the context of region sustainable development strategy", in *Transport Problems*, vol. 8, 2013, pp. 107-111.
- [4] I. Makarova, et al., "Intellectualization of transport systems for the benefit of safety and the sustainable development of territories", in *Journal of International Scientific Publications: Ecology&Safety*, vol. 7, 2013, pp. 189-199.
- [5] I. Makarova, et al., "Increase of City Transport System Management Efficiency with Application of Modeling Methods and Data Intellectual Analysis", in *Intelligent Transportation Systems-Problems and Perspectives*. Springer, 2015, pp.37-80.
- [6] J. Xia & M. Chen "Defining Traffic Flow Phases Using Intelligent Transportation Systems-Generated Data", in *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*, vol. 11, 2007, pp. 15-24.
- [7] F. Zhou & S. Jun "Deploying an Intelligent Transportation System in Chongming County", in *Shanghai Journal of Urban Technology*, vol. 17, 2010, pp. 39-51.
- [8] K. Gkritza et al., "Intelligent Transportation Systems Applications for the Environment and Energy Conservation (Part 1)", in *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*. vol. 17, 2013, pp. 1-2.
- [9] M. R. Tayyaran et al., "Impact of telecommuting and intelligent transportation systems on residential location choice", in *Transportation Planning and Technology*, vol.26, 2003, pp.171-193.

- [10] R. Harb, et al., "Two Simplified Intelligent Transportation System-Based Lane Management Strategies for Short-Term Work Zones", in *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*, vol.15, 2011, pp. 52-61.
- [11] T. Gärling, et al., "Adaptation of Private Car Use in Response to Travel Demand Management Measures: Potential Roles of Intelligent Transportation Systems", in *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*, vol. 8, 2004, pp. 189-194.
- [12] M. Ceci, A. Cuzzocrea, D. Malerba "Effectively and efficiently supporting roll-up and drill-down OLAP operations over continuous dimensions via hierarchical clustering", in *Journal of Intelligent Information Systems*, 2015, vol. 44, pp. 309-333.
- [13] A. Ghrab, et al., "A framework for building OLAP cubes on graphs", in *Lecture Notes in Computer Science*, 2015, vol. 9282, pp. 92-105.
- [14] Reporting Services Reports (SSRS). URL: <https://msdn.microsoft.com/en-us/library/bb522712.aspx>
- [15] K. J. Cios, *Data Mining: A Knowledge Discovery Approach*. Springer Science+Business Media, LLC, 2007.-600 p.
- [16] E. F.Codd, "Providing OLAP to User-Analysts: An IT Mandate", Codd & Associates, 1993. 27 p.
- [17] M. M. Awan, M. Usman "Intelligent analysis of data cube via statistical methods", in *The 10th International Conference on Digital Information Management (ICDIM)*, 2015. pp. 20-27.