

## Reference List

- [1] Statista, 'Cumulative five-year transport infrastructure spending breakdown globally between 2016 and 2020, By region', 2017. [Online]. Available: <https://www.statista.com/statistics/728969/worldwide-cumulative-spending-on-transport-infrastructure-by-region/>.
- [2] T. N. Dhamala and U. Pyakurel, 'Significance of Transportation Network Models in Emergency Planning of Cities', *Cities People Places An Int. J. Urban Environ.*, vol. 1, no. 2, pp. 58–76, Apr. 2016.
- [3] E. D'Andrea and F. Marcelloni, 'Detection of traffic congestion and incidents from GPS trace analysis', *Expert Syst. Appl.*, vol. 73, pp. 43–56, May 2017.
- [4] R. Samarajiva, S. Lokanathan, K. Madhawa, G. Kreindler, and D. Maldeniya, 'Big data to improve urban planning', *Econ. Polit. Wkly.*, vol. 50, no. 22, pp. 42–48, 2015.
- [5] G. Chatzimilioudis, A. Konstantinidis, C. Laoudias, and D. Zeinalipour-Yazti, 'Crowdsourcing with Smartphones', *IEEE Internet Comput.*, vol. 16, no. 5, pp. 36–44, Sep. 2012.
- [6] Ministry of Megapolis and Western Development, 'Western Region Megapolis Transport Master Plan', Colombo, Sri Lanka, 2016.
- [7] R. Gudishala, C. Wilmot, and A. Mokkaapati, 'Travel Time Estimation Using Bluetooth', Louisiana, 2016.
- [8] S. M. Turner, W. L. Eisele, R. J. Benz, and J. Douglas, 'Travel time data collection handbook', Washington DC, 1998.
- [9] X. Liu, S. Chien, and K. Kim, 'Evaluation of floating car technologies for travel time estimation', *J. Mod. Transp.*, vol. 20, no. 1, pp. 49–56, 2012.
- [10] E. Emam and H. AI-Deek, 'Using Real-Life Dual-Loop Detector Data to Develop New Methodology for Estimating Freeway Travel Time Reliability', *Transp. Res. Rec. J. Transp. Res. Board*, vol. 1959, pp. 140–150, Jan. 2006.
- [11] R. Ewing and K. Bartholomew, 'Best Practices in Metropolitan Transportation Planning', 2011.
- [12] S. I.-J. Chien and C. M. Kuchipudi, 'Dynamic Travel Time Prediction with Real-Time and Historic Data', *J. Transp. Eng.*, vol. 129, no. 6, pp. 608–616, 2003.
- [13] D. M. Scott, D. C. Novak, L. Aultman-Hall, and F. Guo, 'Network

- Robustness Index: A new method for identifying critical links and evaluating the performance of transportation networks’, *J. Transp. Geogr.*, vol. 14, no. 3, pp. 215–227, 2006.
- [14] E. P. Dennis, R. Wallace, and B. Reed, ‘Crowdsourcing Transportation Systems Data’, Michigan, 2015.
- [15] S. Amini, I. Gerostathopoulos, and C. Prehofer, ‘Big data analytics architecture for real-time traffic control’, in *2017 5th IEEE International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS)*, 2017, no. Tum Llcm, pp. 710–715.
- [16] V. Frias-Martinez and E. Frias-Martinez, ‘Spectral clustering for sensing urban land use using Twitter activity’, *Eng. Appl. Artif. Intell.*, vol. 35, pp. 237–245, 2014.
- [17] J. He, W. Shen, P. Divakaruni, L. Wynter, and R. Lawrence, ‘Improving traffic prediction with tweet semantics’, in *IJCAI International Joint Conference on Artificial Intelligence*, 2013, pp. 1387–1393.
- [18] D. Mchugh, ‘Traffic Prediction and Analysis using a Big Data and Visualisation Approach’, 2015.
- [19] S. Spyratos, D. Stathakis, M. Lutz, and C. Tsinaraki, ‘Using Foursquare place data for estimating building block use’, *Environ. Plan. B Urban Anal. City Sci.*, vol. 44, no. 4, pp. 693–717, Jul. 2017.
- [20] Y. Sun and M. L., ‘Investigation of Travel and Activity Patterns Using Location-based Social Network Data: A Case Study of Active Mobile Social Media Users’, *ISPRS Int. J. Geo-Information*, vol. 4, no. 3, pp. 1512–1529, 2015.
- [21] Waze Mobile Limited, ‘Privacy Policy’, 2018. [Online]. Available: <https://www.waze.com/en-GB/legal/privacy>. [Accessed: 25-May-2018].
- [22] INRIX Inc, ‘Privacy Policy’, *INRIX Traffic App*, 2017. [Online]. Available: <http://inrix.com/privacy-policy/>. [Accessed: 21-Jul-2017].
- [23] HERE Global B.V., ‘Privacy Policy’, *HERE Global B.V.*, 2018. [Online]. Available: <https://legal.here.com/en-gb/privacy>. [Accessed: 25-May-2018].
- [24] Cellint Traffic Solutions PVT LYD, ‘Cellint Traffic Sense’, *Cellint Traffic Solutions*, 2018. [Online]. Available: <http://www.cellint.com/trafficsense/#SystemInterfaces>. [Accessed: 04-Jan-2018].

- [25] Tiramisu Transit LLC, ‘Tiramisu - The Real-time Bus Tracker’, *Tiramisu Transit LLC*, 2017. [Online]. Available: <https://www.transitwiki.org/TransitWiki/index.php/Tiramisu>. [Accessed: 06-Sep-2017].
- [26] U.S. Air Force., ‘Official U.S. government information about the Global Positioning System (GPS) and related topics’. [Online]. Available: <https://www.gps.gov/>.
- [27] S. Zirari, P. Canalda, and F. Spies, ‘WiFi GPS based combined positioning algorithm’, *Wirel. Commun. Netw. Inf. Secur. (WCNIS), 2010 IEEE Int. Conf.*, no. Ea 4269, pp. 684–688, 2010.
- [28] Z. Farid, R. Nordin, and M. Ismail, ‘Recent Advances in Wireless Indoor Localization Techniques and System’, *J. Comput. Networks Commun.*, vol. 2013, pp. 1–12, 2013.
- [29] M. Moeglein, D. Rowitch, W. Riley, J. James Douglass Deloach, and L. Sheynblat, ‘Wireless Network Hybrid Positioning’, USOO9335419B2, 2003.
- [30] F. Alizadeh-Shabdiz, ‘System and method for using a satellite positioning system to filter WLAN access points in a hybrid positioning system’, US8130148B2, 2008.
- [31] C. Post and S. Woodrow, ‘Location is everything-balancing innovation, convenience, and privacy in location-based technologies’, vol. 2008, no. December, p. 61, 2008.
- [32] N. D. Lane *et al.*, ‘Google Announces Launch of Google Maps Mobile with “My Location” Technology’, *News from Google*, vol. 48, no. November 2005, pp. 140–150, 2010.
- [33] R. (Google) Leiteritz, ‘Google’s submission to several national data protection authorities on vehicle-based collection of wifi data for use in Google location based services’, 2010. [Online]. Available: [https://static.googleusercontent.com/media/www.google.com/en//googleblogs/pdfs/google\\_submission\\_dpas\\_wifi\\_collection.pdf](https://static.googleusercontent.com/media/www.google.com/en//googleblogs/pdfs/google_submission_dpas_wifi_collection.pdf).
- [34] Z. Ji, R. Jain, and Google mobile team, ‘Google Mobile Blog’, 2008. [Online]. Available: <http://googlemobile.blogspot.com/2008/06/google-enables-location-aware.html>. [Accessed: 07-Sep-2017].
- [35] E. U. Brandt, ‘Mobile State Determination of Location Aware Devices’, US8886457B2, 2011.

- [36] Google Inc, ‘Privacy Policy’, 2018. [Online]. Available: <https://policies.google.com/privacy>. [Accessed: 17-Apr-2017].
- [37] Y. Wang, Y. Zheng, and Y. Xue, ‘Travel time estimation of a path using sparse trajectories’, *Proc. 20th ACM SIGKDD Int. Conf. Knowl. Discov. data Min. - KDD '14*, no. 5, pp. 25–34, 2014.
- [38] B. Dewulf *et al.*, ‘Examining commuting patterns using Floating Car Data and circular statistics: Exploring the use of new methods and visualizations to study travel times’, *J. Transp. Geogr.*, vol. 48, no. August, pp. 41–51, 2015.
- [39] W. Zhao, E. McCormack, D. J. Dailey, and E. Scharnhorst, ‘Using Truck Probe GPS Data to Identify and Rank Roadway Bottlenecks’, *J. Transp. Eng.*, vol. 139, no. 1, pp. 1–8, 2013.
- [40] B. Zhao and B. Liu, ‘High-Granularity Dynamic Traffic Flow Prediction Model Based on Artificial Neural Network’. 2017.
- [41] Statista, ‘Global market share held by leading smartphone vendors from 4th quarter 2009 to 1st quarter 2018’. [Online]. Available: <https://www.statista.com/statistics/271496/global-market-share-held-by-smartphone-vendors-since-4th-quarter-2009/>.
- [42] E. E. Lopes, ‘Proposta Metodológica para Validação de Imagens de Alta Resolução do Google Earth para a Produção de Mapas Edésio Elias Lopes’, 2009.
- [43] S. K. Atukorala and H. Liyanage, ‘Keeping Children in Sri Lanka Safe and Empowered Online’.
- [44] Hootsuits Inc, ‘The global state of digital in 2018’, 2018.
- [45] Telecommunication Regulatory Commission of Sri Lanka, ‘Annual Statistics 2017’, 2017.
- [46] GSMA Intelligence, ‘Mobile Connectivity Index’, 2017. [Online]. Available: [http://www.mobileconnectivityindex.com/widgets/connectivityIndex/pdf/ConnectivityIndex\\_V01.pdf](http://www.mobileconnectivityindex.com/widgets/connectivityIndex/pdf/ConnectivityIndex_V01.pdf). [Accessed: 20-Jan-2018].
- [47] D. Helbing, ‘From microscopic to macroscopic traffic models’, in *A Perspective Look at Nonlinear Media*, Springer Berlin Heidelberg, 2012, pp. 122–139.
- [48] S. Chandra, ‘Capacity Estimation Procedure For Two-Lane Roads Under Mixed Traffic Conditions’, *J. Indian Roads Congr.*, vol. i, no. 498, pp. 139–167, 2004.

- [49] C. Antoniou and H. Koutsopoulos, 'Estimation of Traffic Dynamics Models with Machine-Learning Methods', *Transp. Res. Rec. J. Transp. Res. Board*, vol. 1965, no. 1, pp. 103–111, Jan. 2006.
- [50] A. Cheng, X. Jiang, Y. Li, C. Zhang, and H. Zhu, 'Multiple sources and multiple measures based traffic flow prediction using the chaos theory and support vector regression method', *Phys. A Stat. Mech. its Appl.*, vol. 466, pp. 422–434, Jan. 2017.
- [51] X. Dai, R. Fu, Y. Lin, L. Li, and F.-Y. Wang, 'DeepTrend: A Deep Hierarchical Neural Network for Traffic Flow Prediction', Jul. 2017.
- [52] L. U. Laboshin, A. A. Lukashin, and V. S. Zaborovsky, 'The Big Data approach to collecting and analyzing traffic data in large scale networks', *Procedia - Procedia Comput. Sci.*, vol. 103, no. October 2016, pp. 536–542, 2017.
- [53] C. Xu, Z. Li, and W. Wang, 'Short-term traffic flow prediction using a methodology based on autoregressive integrated moving average and genetic programming', *Transport*, vol. 31, no. 3, pp. 343–358, Jul. 2016.
- [54] J. B. Elsner and A. A. Tsonis, 'Nonlinear Prediction, Chaos, and Noise', *Bull. Am. Meteorol. Soc.*, vol. 73, no. 1, pp. 49–60, Jan. 1992.
- [55] J. Bao, W. Chen, and Z. Xiang, 'Prediction of Traffic Flow Based on Cellular Automaton', *2015 Int. Conf. Ind. Informatics - Comput. Technol. Intell. Technol. Ind. Inf. Integr.*, pp. 88–92, 2015.
- [56] Q. Shang, C. Lin, Z. Yang, Q. Bing, and X. Zhou, 'A hybrid short-term traffic flow prediction model based on singular spectrum analysis and kernel extreme learning machine', *PLoS One*, vol. 11, no. 8, pp. 1–25, 2016.
- [57] L. Zhang, Q. Liu, W. Yang, N. Wei, and D. Dong, 'An Improved K-nearest Neighbor Model for Short-term Traffic Flow Prediction', *Procedia - Social and Behavioral Sciences*, vol. 96, no. Cictp. pp. 653–662, 2013.
- [58] M. Castro-Neto, Y.-S. Jeong, M.-K. Jeong, and L. D. Han, 'Online-SVR for short-term traffic flow prediction under typical and atypical traffic conditions', *Expert Syst. Appl.*, vol. 36, no. 3, pp. 6164–6173, Apr. 2009.
- [59] J. Zhao and S. Sun, 'High-Order Gaussian Process Dynamical Models for Traffic Flow Prediction', *IEEE Trans. Intell. Transp. Syst.*, vol. 17, no. 7, pp. 2014–2019, Jul. 2016.
- [60] IBM Corp, 'IBM SPSS Modeler for Windows'. IBM Corp, 2016.

- [61] R. P. G. K. S. Rajapaksha and J. M. S. J. Bandara, 'Effect of traffic composition on capacity of two-way two-lane, roads under mix traffic condition', *Int. Conf. Adv. Highw. Eng. Transp. Syst.*, p. 20, 2017.
- [62] J. Zhong and S. Ling, 'Key Factors of K-Nearest Neighbours Nonparametric Regression in Short-Time Traffic Flow Forecasting', 2015, pp. 9–12.
- [63] T. Wendler and S. Gröttrup, *Data Mining with SPSS Modeler*. Cham: Springer International Publishing, 2016.
- [64] C. F. Daganzo, *Fundamentals of transportation and traffic operations*. Pergamon, 1997.
- [65] J. Andres L. and R. Alvaro, 'Exploratory Methodology for Identification of Urban Bottlenecks Using GPS Data', *J. Traffic Transp. Eng.*, vol. 4, no. 5, pp. 280–290, Oct. 2016.
- [66] L. Zhang and D. Levinson, 'Some Properties of Flows at Freeway Bottlenecks', *Transp. Res. Rec. J. Transp. Res. Board No 1883*, pp. 122–131, 2004.
- [67] D. Hale, A. Hajbabaie, J. Ma, J. Hu, H. Park, and J. Bared, 'Proposed Data-Driven Performance Measures for Comparing and Ranking Traffic Bottlenecks', in *Transportation Research Procedia; International Symposium on Enhancing Highway Performance Performance*, 2016, vol. 15, pp. 483–494.
- [68] C. Chen, A. Skabardonis, and P. Varaiya, 'Systematic identification of freeway bottlenecks', *Transp. Res. Rec. J. Transp. Res. Board*, no. January, 2004.
- [69] R. L. Bertini and A. M. Myton, 'Use of Performance Measurement System Data to Diagnose Freeway Bottleneck Locations Empirically in Orange County, California', *Transp. Res. Rec. J. Transp. Res. Board No 1925*, pp. 48–57, 2005.
- [70] X. Ban, L. Chu, and H. Benouar, 'Bottleneck Identification and Calibration for Corridor Management Planning', *Transp. Res. Rec. J. Transp. Res. Board*, vol. 1999, pp. 40–53, Jan. 2007.
- [71] Z. Jia, P. Varaiya, C. Chen, K. Petty, and A. Skabardonis, 'Congestion, excess demand, and effective capacity in California freeways'. pp. 1–38, 2000.
- [72] M. J. Cassidy and R. L. Bertini, 'Some traffic features at freeway

- bottlenecks’, *Transp. Res. Part B*, vol. 33, pp. 25–42, 1999.
- [73] J. Wiecek, R. Fernández-Moctezuma, and R. Bertini, ‘Techniques for Validating an Automatic Bottleneck Detection Tool Using Archived Freeway Sensor Data’, *Transp. Res. Rec. J. Transp. Res. Board*, vol. 2160, pp. 87–95, Dec. 2010.
- [74] Japan International Coporation Agency; Oriental Consultants Co LTD, ‘Ubnan Transport System Development Project For Colombo Metropolitan Region’.
- [75] Japan International Coporation Agency; Oriental Consultants Co LTD, ‘Ubnan Transport System Development Project For Colombo Metropolitan Region’.
- [76] A. Janecek, K. A. Hummel, D. Valerio, F. Ricciato, and H. Hlavacs, ‘Cellular Data Meet Vehicular Traffic Theory : Location Area Updates and Cell Transitions for Travel Time Estimation’, in *ACM Conference on Ubiquitous Computing*, 2012, pp. 361–370.
- [77] L. Zheng and Y. Chang, ‘Risk assessment model of bottlenecks for urban expressways using survival analysis approach’, *Transp. Res. Procedia*, vol. 25, pp. 1544–1555, 2017.
- [78] Transportation Research Board’s, *Highway Capacity Manual 2010*. 2010.
- [79] M. Elhenawy, H. Chen, H. A. Rakha, and C. E. Via, ‘Traffic Congestion Identification Considering Weather and Visibility Conditions Using Mixture Linear Regression’, vol. 4983, no. 540, pp. 1–20, 2015.
- [80] J. J. Wu, H. J. Sun, Z. Y. Gao, and H. Z. Zhang, ‘Reversible lane-based traffic network optimization with an advanced traveller information system’, *Eng. Optim.*, vol. 41, no. 1, pp. 87–97, 2009.