

## REFERENCES

- Abdulhai, B, Porwal, H. and Recker, W. (2002) Short-term traffic flow prediction using neuro-genetic algorithms, **ITS Journal** 7, 3-41.
- Addison, P. S. and Low, D. J. (1996) Order and chaos in the dynamics of vehicle platoons, **Traffic Engineering and Control**, July/August, 456-459.
- Adrangi, B., Chatrath, A., Dhanda, K. K. and Raffiee, K. (2001) Chaos in oil prices? Evidence from future markets, **Energy Economics**, Vol. 23, Issue 4, 405-425.
- Ahmed, M. S. and Cook, A. R. (1979) Analysis of freeway traffic time-series data by using Box-Jenkins techniques, **Transportation Research Record**, No. 722, 1-9.
- Ahmed, S. A. (1983) Stochastic processes in freeway traffic, **Traffic Engineering and Control**, Vol. 24, 306-311.
- Ahmed, S. A. and Cook, A. R. (1982) Discrete dynamic models for freeway incident detection systems, **Transportation Planning and Technology**, Vol. 7, 231-242.
- Ahmed, S. R. and Cook, A. R. (1982) Application of time-series analysis techniques to freeway incident detection, **Transportation Research Record** 841, 19-21.
- Athol, P. (1965), Interdependence of certain operational characteristics within a moving traffic stream, **Highway Research Record** 72, 58-88.
- Barnett, W. A., Gallant, R. A., Hinich, J. M., Jungeilges, A. J., Kaplan, D. T. and Jensen, M. J. (1995) Robustness of nonlinearity and chaos tests to measurement error, inference method, and sample size, **Journal of Economic Behavior and Organization**, Vol. 27, Issue 2, 310-320.
- Brock, W. A. (1986) Distinguishing random and deterministic systems, **Journal of Economic Theory**, Vol. 40, No. 1, 168-195.
- Cecen, A. A. and Erkal, C. (1996) Distinguishing between stochastic and deterministic behavior in high frequency foreign exchange rate returns: can nonlinear dynamics help forecasting? **International Journal of Forecasting**, Vol. 12, Issue 4, 465-473.
- Cheu, R. L. and Ritchie, S. G. (1995) Automated detection of lane-blocking freeway incidents using artificial neural networks, **Transportation Research C**, Vol. 3, No. 6, 371-388.
- Cohen, S. (1994) Comparative Assessment of Conventional and New Incident Detection

Algorithms, **Proceeding of 7th International Conference on Road Traffic Monitoring and Control**, London, April 1994.

Cook, A. R. and Cleveland, D. E. (1974) Detection freeway capacity-reducing incidents by traffic stream measurements, **Transportation Research Record** 495, 1-11.

Dendrinos, D. S. (1994) Traffic-flow dynamics: a search for chaos, **Chaos, Solitons & Fractals**, Vol. 4, No. 4, 605-617.

Dia, H. and Rose, G. (1997) Development and evaluation of neural network freeway incident detection models using field data, **Transportation Research** 5C, 313-331.

Disbro, J. E. and Frame, M. (1989) Traffic flow theory and chaotic behavior, **Transportation Research Record**, No. 1225, 109-115.

Dudek, C. L., Messer, C. J. and Nuckles, N. B. (1974) Incident detection on urban freeways, **Transportation Research Record**, No. 495, 12-24.

Fambro, D. B. and Ritch, G. P. (1980) Evaluation of an algorithm for detecting urban freeway incidents during low-volume conditions, **Transportation Research Record**, No. 773, 22-37.

Farmer, J. D. and Sidorowich, J. J. (1987) Predicting chaotic time series, **Physical Review Letters**, Vol. 59, No. 8, 845-848.

Forbes, G. J. (1992) Identifying incident congestion, **ITE Journal**, June 1992, 17-22.

Forbes, G. J. and Hall, F. L. (1990) The applicability of catastrophe theory in modelling freeway traffic operations, **Transportation Research** 24A, 335-344.

Frison, T. W. and Abarbanel, H. D. I. (1997) Identification and quantification of nonstationary chaotic behavior, **IEEE International Conference on Acoustics, Speech, and Signal Processing**, Vol. 3, 2393-2396.

Gall, A. I. and Hall, F. L. (1989) Distinguishing between incident congestion and recurrent congestion: A proposed logic, **Transportation Research Record** 1232, 1-8.

Gencay, R. (1996) A statistical framework for testing chaotic dynamics via Lyapunov exponents, **Physica D**, Vol. 89, 261-266.

Grassberger, P. and Procaccia, I. (1983) Measuring the strangeness of strange attractors, **Physica D**, Vol. 9, 189-208.

Hall, F. L. (1987) An interpretation of speed-flow-concentration relationships using catastrophe theory, **Transportation Research** 21A, No. 3, 191-201.

Hilborn, R. C. (1994) **Chaos and Nonlinear Dynamics: An Introduction for Scientists and Engineers**, Oxford University Press, New York.

Hsiao, C. H., Lin, C. T. and Cassidy, M., (1994) Application of fuzzy logic and neural networks to automatically detect freeway traffic incidents, **Journal of Transportation Engineering** 120, 753-771.

Huang, J. H. (1996) **Real-time Area-wide Vehicle Tracking and Traffic Assessment using Computer Vision**. Ph.D. dissertation, Department of Civil Engineering, National Taiwan University, Taiwan. (in Chinese)

Iokibe, T., Kanke, M., Fujimoto, Y. and Suzuki, S. (1994) Short-term prediction on chaotic time series by local fuzzy reconstruction method, **Proc. of the Third International Conference on Fuzzy Logic, Neural Nets and Soft Computing**, Iizuka, Japan, 491-492.

Iokibe, T., Kanke, M. and Yasunari, F. (1995) Local fuzzy reconstruction method for short-term prediction on chaotic time series, **Fuzzy Set**, Vol. 7, No. 1, 186-194.

Iokibe, T., Koyama, M. and Sugiura, T. (1996) An application for diagnosis by chaotic approach, **Journal of Robotics and Mechatronics**, Vol. 8, No. 4, 329-332.

Iokibe, T., Koyama, M. and Taniguchi, M. (1997) Industrial applications of short-term prediction on chaotic time series by local fuzzy reconstruction method, **Proceedings of the First International Conference on Knowledge-Based Intelligent Electronic Systems**, Adelaide, Australia, Vol. 1, 126-130.

Ivan, J. N. (1997) Neural Network Representations for Arterial Street Incident Detection Data Fusion, **Transportation Research Part C**, Vol. 5, No. 3-4, 245-254.

Ivan, J. N., Schofer, J. L., Bhat, C. R., Liu, P. C., Koppelman, F. S. and Rodriguez, A. (1993) Arterial street incident detection using multiple data sources: plans for advance, **Proceedings of the Pacific Rim Trans Tech Conference, The 3rd International Conference on Applications of Advanced Technologies in Transportation Engineering**, Seattle, Washington, 429-435.

Ivan, J. N., Schofer, J. L., Koppelman, F. S. and Massone, L. L. E. (1995) Real-time Data Fusion for Arterial Street Incident Detection using Neural Networks, **Transportation Research Record**, No. 1497, 27-35.

Jin, X., Cheu, R. L. and Srinivasan, D. (2002) Development and adaptation of constructive probabilistic neural network in freeway incident detection, **Transportation Research** 10C, 121-147.

Kantz, H. and Schreiber, T. (1997) **Nonlinear Time Series Analysis**, Cambridge Nonlinear Science Series 7, Cambridge University Press.

Lan, L. W. and Chiou, Y. C. (1997) Development and applications of learning algorithms for fuzzy neural networks: a case of pavement diagnosis, **Transportation Planning Journal** 26, 233-252. (in Chinese)

Lan, L. W. and Chen, Y. W. (1998) Short-term prediction on chaotic traffic flows by fuzzy reasoning, **Journal of the Chinese Fuzzy Systems Association**, Vol. 4, No. 1, 73-80. (in Chinese)

Lan, L. W. and Huang, Y. C. (2003) Fuzzy neural incident detection algorithms with rolling training procedure, **Proceedings of the 5<sup>th</sup> Eastern Asia Society for Transportation Studies**, Fukuoka, Japan.

Lan, L. W. and Kuo, A. Y. (2002) Development of a fuzzy neural network color image vehicular detection (FNNCIVD) system, **5<sup>th</sup> IEEE International Conference on Intelligent Transportation Systems**, Singapore, 88-93.

Lan, L. W., Kuo, A. Y. and Huang, Y. C. (2003a) Color image vehicular detection systems with and without fuzzy neural network: a comparison, **Journal of the Chinese Institute of Engineers** 26, 659-670.

Lan, L. W. and Lin, F. Y. (2003) Short-term traffic flow dynamics: a chaotic investigation, **Transportation Planning Journal**, Vol. 32, No. 2, 219-248. (in Chinese)

Lan, L. W., Lin, F. Y. and Huang, Y. C. (2003b) Diagnosis of freeway traffic incidents with chaos theory, **Journal of the Eastern Asia Society for Transportation Studies** 5, 2025-2038.

Lan, L. W., Lin, F. Y. and Kuo, A. Y. (2003c) Chaotic forecasting with confined space fuzzy neighborhoods' difference (CSFND) approach: case of short-term traffic forecast, **Journal of the Chinese Institute of Civil and Hydraulic Engineering**, Vol. 15, No. 3, 589-603. (in Chinese)

Lan, L. W. and Lin, S. Y. (2001) Prediction of short-term traffic dynamics: phase space local approximation method, **Proceedings 16<sup>th</sup> Annual Conference for the Chinese Institute of Transportation**, Nov. 29, Taipei, 477-486. (in Chinese)

Lan, L. W., Huang, Y. C. and Kuo, A. Y. (2004) Development of a fuzzy neural network (FNN) incident detection system, **Journal of the Chinese Institute of Civil and Hydraulic Engineering** 16, 499-512. (in Chinese)

Lee, S., Krammes, R. A. and Yen, J. (1998) Fuzzy-logic-based incident detection for

signalized diamond interchanges, **Transportation Research** 6C, 359-377.

Levin, M. and Krause, G. M. (1978) Incident detection: a Bayesian approach, **Transportation Research Record** 682, 52-58.

Levin, M. and Krause, G. M. (1979a), A probabilistic approach to incident detection on urban freeways, **Traffic Engineering and Control**, Vol. 20, No. 3, 107-109.

Levin, M. and Krause, G. M. (1979b) Incident Detection Algorithms, Part 1: Off-line Evaluation; Part 2: On-line Evaluation, **Transportation Research Record**, No. 722, 49-64.

Lin, C. K. and Chang, G. L. (1998) Development of a fuzzy-expert system for incident detection and classification, **Mathematical and Computer Modelling** 27, 9-25.

Luk, J. Y. K. and Sin, F. Y. C. (1992) The calibration of freeway incident detection algorithms, **Proceedings of 7<sup>th</sup> Road Engineering Association of Asia and Australasia conference**, Singapore, 347-355.

Mandelbrot, B. B. (2000) **The Fractal Geometry of Nature**, Freeman and Company, New York.

Parkany, A. E. and Bernstein, D. (1993) Using VRC data for incident detection, **Proceedings of the Pacific Rim Trans Tech Conference**, The 3rd International Conference on Applications of Advanced Technologies in Transportation Engineering, Seattle, Washington, 25-28.

Payne, H. J. and Tignor, S. C. (1978) Freeway incident detection algorithms based on decision trees with states, **Transportation Research Record** 682, 30-37.

Persaud, B. N. and Hall, F. L., (1988) Effect of grade on the relationship between flow and occupancy on freeways, **Transportation Research Record** 1173, 33-38.

Persaud, B. N. and Hall, F. L. (1989) Catastrophe theory and patterns in 30-second freeway traffic data—implications for incident detection, **Transportation Research** 23A, 103-113.

Persaud, B. N., Hall, F. L. and Hall, L. M (1990) Congestion identification aspects of the McMaster incident detection algorithm, **Transportation Research Record** 1287, 167-175.

Ritchie, S. G. and Cheu, R. L. (1993) Simulation of freeway incident detection using artificial neural networks, **Transportation Research** C, 203-217.

Sethi, V., Bhandari, N., Koppelman, F. S. and Schofer, J. L. (1995) Arterial incident detection using fixed detector and probe vehicle data, **Transportation Research** 3C, 99-112.

Shepherd, A. J. (1997) *Second-order Methods for Neural Networks: Fast and Reliable Training Methods for Multilayer Perceptrons*, Springer, London.

Sheu, J. B. (2002) A fuzzy clustering-based approach to automatic freeway incident detection and characterization, **Fuzzy Sets and Systems** 128, 377-388.

Sheu, J. B. (2004) A sequential detection approach to real-time freeway incident detection and characterization, **European Journal of Operational Research** 157, 451-485.

Sheu, J. B. and Ritchie, S. G. (1998) A new methodology for incident detection and characterization on surface streets, **Transportation Research** 6C, 315-335.

Sprott, J. C. and Rowlands, G. (1995) **Chaos Data Analyzer**, a continuing series of software from Physics Academic Software, American Institute of Physics.

Srinivasan, D., Cheu, R. L., Poh, Y. P. and Ng, A. K. C. (2000) Development of an intelligent technique for traffic network incident detection, **Engineering Applications of Artificial Intelligence** 13, 311-322.

Steed, J. J. and Clowes, D. S. (1989) Detection of road hazards – problems and practicalities, **Proceedings of 2<sup>nd</sup> International Conference on Road Traffic Monitoring**, No. 299, London, 161-166.

Stephanedes, Y. J. and Chassiakos, A. P. (1993) Application of filtering techniques for incident detection, **Journal of Transportation Engineering** 119, 13-26.

Stephanedes, Y. J., Chassiakos, A. P. and Michalopoulos, P. G. (1992) Comparative performance evaluation of incident detection algorithms, **Transportation Research Record** 1360, 50-57.

Stephanedes, Y. J. and Liu, X. (1995) Artificial neural networks for freeway incident detection, **Transportation Research Record** 1494, 91-97.

Sugihara, G. and May, R. M. (1990) Nonlinear forecasting as a way of distinguishing chaos from measurement error in time series, **Nature**, Vol. 344, 734-741.

Sugihara, G., Grenfell, B. and May, R. M. (1990) Distinguishing error from chaos in ecological time series, **Philosophy Transactions of the Royal Society of London B**, Vol. 330, 235-251.

- Tignor, S. C. and Payne, H. J. (1977) Improved Freeway incident detection algorithms, **Public Roads**, Vol. 41, No. 1, 32-40.
- Tsai, J. and Case, E. R. (1979) Development of freeway incident detection algorithm by using pattern-recognition techniques, **Transportation Research Record** 722, 113-116.
- Tsoukalas, L. H. and Uhrig, R. E. (1997) **Fuzzy and Neural Approaches in Engineering**, John Wiley & Sons, Inc. New York.
- Wasserman, P. D. (1993) **Advanced Methods in Neural Computing**, Van Nostrand Reinhold, New York.
- Weil, R., Wootton, J. and Garcia-Ortiz, A. (1998) Traffic Incident Detection: Sensors and Algorithms, **Mathematical and Computer Modelling**, Vol. 27, No. 9-11, 257-291.
- Willisky, A. S., Chow, E. Y., Gershwin, S. B., Greene, C. S., Houpt, P. K. and Kurkjian, A. L. (1980) Dynamic model-based techniques for the detection of incidents on freeways, **IEEE Transactions on Automatic Control** 25, 347-360.
- Xu, H., Kwan, C. M., Haynes, L. and Pryor, J. D. (1998) Real-time adaptive on-line traffic incident detection, **Fuzzy Sets and Systems** 93, 173-183.
- Yin, H., Wong, S. C., Xu, J. and Wong, C. K. (2002) Urban traffic flow prediction using a fuzzy-neural approach, **Transportation Research** 10C, 85-98.
- Zhang, X. and Jarrett, D. F. (1998) Chaos in a dynamic model of traffic flows in an origin-destination network, **Chaos**, Vol. 8, No. 2, 503-513.