

RESEARCH PROFILE AND PUBLICATIONS

My research scope can broadly be classified into three main areas briefly outlined, with selected publications (some are cross-listed), as follows:

1. Analysis of Uncertain Spatial Phenomena and Processes

This line of research focuses on uncertainty analysis in general and imprecision analysis in particular. Fuzzy sets and fuzzy logic approach to the analysis of imprecision/fuzziness induced geographical problems has long been in my research agenda over the years. Fundamental concepts of fuzzy boundary, fuzzy region, fuzzy spatial optimization, etc. have been proposed and analyzed. Methods for spatial inference based on fuzzy logic have also been formulated. By integrating probability, statistics, fuzzy sets, rough sets and granular computing in novel ways, a comprehensive and rigorous framework has been developed for the analysis of uncertainty due to randomness and/or fuzziness and/or information granularity. In particular, a specific series of investigations has been carried out on error analysis and propagation in geographical information.

PUBLICATIONS – REFEREED BOOKS:

Leung, Yee. Digital Twins of Cities – Modeling Urban Dynamics and Complexities. Berlin: Springer, 2026, 203 pages.

Leung, Yee. Spatial Analysis and Planning under Imprecision. Amsterdam: Elsevier, 1988, 376 pages.

(張文修,) 梁怡 (**Leung, Yee**)。不確定性推理原理 (Principles of Reasoning Under Uncertainty)。西安:西安交通大學出版社, 1996, 299 頁。(in Chinese)

PUBLICATIONS-REFEREED EDITED BOOKS:

(張文修, 姚一豫,) 梁怡 (**Leung, Yee**). (Eds.)。粗糙集與概念格 (Rough Sets and Concept Lattice)。西安:西安交通大學出版社, 2006, 438 頁。(in Chinese)

PUBLICATIONS – REFEREED JOURNAL ARTICLES:

(Yue, Zongsheng; Yong, Hongwei; Meng, Deyu; Zhao, Qian;) **Leung, Yee;** (and Zhang, Lei.). "Robust Multiview Subspace Learning With Nonindependently and Nonidentically Distributed Complex Noise". IEEE Transactions on Neural Networks and Learning Systems, (2020): 1070-1084. DOI:10.1109/TNNS.2019.2917328.

(Zhang, Wen-Bin;) **Leung, Yee***; (and Ma, Jiang-Hong). "Analysis of positional uncertainty of road networks in volunteered geographic information with a statistically defined buffer-zone method". International Journal of Geographical Information Science, 33 (2019): 1807-1828, DOI: 10.1080/13658816.2019.1606430.

Leung, Yee*; (Li, Rongrong; and Ji, Nannan). "Application of extended Dempster–Shafer theory of evidence in accident probability estimation for dangerous goods transportation". Journal of Geographical Systems, 19 (2017): 249-271.

Leung, Yee*; (Zhao, Zi; and Ma, Jiang-Hong). "Uncertainty Analysis of Space–Time Prisms Based on the Moment-Design Method". International Journal of Geographical Information Science, 30 (2016): 1336-1358.

(XUE Jie;) **Leung, Yee***; and (MA, Jianghong). "High-order Taylor series expansion methods for error propagation in geographic information systems". Journal of Geographical Systems, 17 (2015):187-206.

(Shao, Ming-wen) and **Leung, Yee***. "Relations between Granular Reduct and Dominance Reduct in Formal Contexts". Knowledge-Based Systems, 65 (2014):1-11.

(Shao, Ming-wen;) **Leung, Yee***; (and Wu, Wei-Zhi). "Rule Acquisition and Complexity Reduction in Formal Decision Contexts". International Journal of Approximate Reasoning, 55 (2014):259-274.

(Zhang Hong-ying;) **Leung, Yee**; (and Zhou, Lei). "Variable-precision-dominance-based rough set approach to interval-valued information systems". Information Sciences, 244 (2013): 75-91.

(Wu, Wei-zhi) and **Leung, Yee***. "Theory and Applications of Granular Labelled Partitions in Multi-scale Decision Tables". Information Sciences, 181(2011), 3878-3897.

(Mi, Ju-sheng;) **Leung, Yee**; (and Wu, Wei-zhi). "Dependence-space-based Attribute Reduction in Consistent Decision Tables". Soft Computing, 15 (2011):261-268.

(Wu, Weizhi;) **Leung, Yee**; (and Mi, Jusheng). "Granular Computing and Knowledge Reduction in Formal Contexts." IEEE Transactions on Knowledge and Data Engineering, 21(2009): 1461-1474.

(Wu, Weizhi;) **Leung, Yee**; (and Mi, Jusheng). "On Generalized Fuzzy Belief Functions in Infinite Spaces." IEEE Transactions on Fuzzy Systems, 17(2009): 385-397.

Leung, Yee;(Ma, Jian-min; Zhang, Wen-xiu and Li, Tong-jun). "Dependence-space-based Attribute Reductions in Inconsistent Decision Information Systems". International Journal of Approximate Reasoning, 49(2008): 623-630.

Leung, Yee*; (Fischer, Manfred M; Wu, Wei-Zhi; and Mi, Ju-Sheng). “A rough Set Approach for the Discovery of Classification Rules in Interval-Valued Information Systems”. International Journal of Approximate Reasoning, 47(2008): 233-246.

(Li, Tongjun;) **Leung, Yee**; (and Zhang, Wenxiu). “Generalized Fuzzy Rough Approximation Operators Based on Fuzzy Coverings”. International Journal of Approximate Reasoning, 48(2008): 836-856.

(Ma, Jianmin; Zhang, Wenxiu;) **Leung, Yee**; (and Song, Xiaoxue). “Granular computing and dual Galois connection”. Information Sciences, 177(2007): 5365-5377.

Leung, Yee*; (Fung Tung: Mi, Jusheng; and Wu, Weizhi). “A Rough Set Approach to the Discovery of Classification Rules in Spatial Data.” International Journal of Geographical Information Science, 21(2007): 1033-1058.

(Ge, Yong;) **Leung, Yee**; (Ma, Jianghong; and Wang, Jinfeng). “Modelling for Registration of Remotely Sensed Imagery when Reference Control Points Contain Error.” Science in China: Series D Earth Sciences, 19(2006): 739-746.

Leung, Yee*; (Wu, Weizhi; and Zhang, Wenxiu). “Knowledge Acquisition in Incomplete Information Systems: A Rough Set Approach.” European Journal of Operational Research, 168(2006): 164-180.

(Wu, Wei-Zhi;) **Leung, Yee**; (and Zhang, Wen-Xiu). “On Generalized Rough Fuzzy Approximation Operators.” Transactions on Rough Sets, V(2006): 263-284.

(Ma, Jiang-Hong;) **Leung, Yee**; (and Luo, Jian-Cheng). “A Highly Robust Estimator for Regression Models.” Pattern Recognition Letters, 27(2006): 29-36.

(Wu, Wei-Zhi;) **Leung, Yee**; (and Mi, Ju-Sheng). “On Characterizations of (I, T)-fuzzy Rough Approximation Operators.” Fuzzy Sets and Systems, 154(2005): 76-102.

(Mi, Jusheng;) **Leung, Yee**; (and Wu, Weizhi). “An Uncertainty Measure in Partition-based Fuzzy Rough Sets.” International Journal of General Systems, 34(2005): 77-90.

(Li, Deyu; Zhang, Bo; and) **Leung, Yee***. “On Knowledge Reduction in Inconsistent Decision Information Systems.” International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, 12(2004): 651-672.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). “A General Framework for Error Analysis in Measurement-Based GIS, Part 1: The Basic Measurement-Error Model and Related Concepts.” Journal of Geographical Systems, 6(2004): 325-354.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). “A General Framework for Error Analysis in Measurement-Based GIS, Part 2: The Algebra-Based Probability Model for Point-in-Polygon Analysis.” Journal of Geographical Systems, 6(2004): 355-380.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). “A General Framework for Error Analysis in Measurement-Based GIS, Part 3: Error Analysis in Intersections and Overlays.” Journal of Geographical Systems, 6(2004): 381-402.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). “A General Framework for Error Analysis in Measurement-Based GIS, Part 4: Error Analysis in Length and Area Measurements.” Journal of Geographical Systems, 6(2004): 403-428.

Leung, Yee*; (and Li, Deyu). “Maximal Consistent Block Technique for Rule Acquisition in Incomplete Information Systems.” Information Sciences, 153(2003): 85-106.

Leung, Yee*; (Mei, Chang-Lin; and Zhang, Wen-Xiu). “Statistical Test for Local Patterns of Spatial Association”. Environment and Planning A, 35(2003): 725-744.

(Wang, Guo-Jun; and) **Leung, Yee***. “Integrated Semantics and Logic Metric Spaces”. Fuzzy Sets and Systems, 136(2003): 71-91.

(Wu, Wei-zhi;) **Leung, Yee***; (and Zhang, Wen-xiu). “Connections Between Rough Set Theory and Dempster-Shafter Theory of Evidence”. International Journal of General Systems, 31(2002): 405-430.

(Huang, Yefang; and) **Leung, Yee***. “Analysing Regional Industrialisation in Jiangsu Province Using Geographically Weighted Regression”. Journal of Geographical Systems, 4(2)(2002): 233-249.

(Mei, Changlin; Zhang, Wenxiu; and) **Leung, Yee**. “Statistical Inferences for Varying-Coefficient Models Based on Locally Weighted Regression Technique.” ACTA Mathematicae Applicatae Sinica, 17(3)(2001): 407-417.

Leung, Yee*; (and Huang, Chongfu). “A New Algorithm for Estimating the Risk of Natural Disasters with Incomplete Data.” International Journal of General Systems, 29(2000), 175-204.

(Huang, Chongfu; and) **Leung, Yee***. “Estimating the Relationship between Iseismic Area and Earthquake Magnitude by a Hybrid Fuzzy-Neural-Network Method.” Fuzzy Sets and Systems, 107(1999), 131-146.

Leung, Yee*; (and Yan, Jian-ping). “A Locational Error Model for Spatial Features.” International Journal of Geographical Information Science, 12(1998): 607-620.

Leung, Yee*; (and Yan, Jian-ping). “Point-in-Polygon Analysis under Certainty and Uncertainty.” GeoInformatica: An International Journal on Advances of Computer Science for Geographic Information Systems, 1(1997): 93-114.

Leung, Yee. “Interregional Equilibrium and Fuzzy Linear Programming: 1.” Environment and Planning A, 20(1988): 25-40.

Leung, Yee. “Interregional Equilibrium and Fuzzy Linear Programming: 2.” Environment and Planning A, 20(1988): 219-230.

Leung, Yee. “On the Imprecision of Boundaries.” Geographical Analysis, an International Journal of Theoretical Geography, 19(1987): 125-151.

Leung, Yee. “Basic Issues of Fuzzy Set Theoretic Spatial Analysis.” Papers in Regional Science, 58(1985): 35-46.

Leung, Yee. “Towards a Flexible Framework for Regionalization.” Environment and Planning A, 16(1984): 1613-1632.

Leung, Yee. “Compromise Programming under Fuzziness.” Control and Cybernetics, 13(1984): 203-215.

Leung, Yee. “Fuzzy Sets Approach to Spatial Analysis and Planning – A Nontechnical Evaluation.” Geografiska Annaler, 65B(1983): 65-75.

Leung, Yee. “Approximate Characterization of Some Fundamental Concepts of Spatial Analysis.” Geographical Analysis, an International Journal of Theoretical Geography, 14(1982): 19-40.

Leung, Yee. “A Fuzzy Set Analysis of Sociometric Structure.” Journal of Mathematical Sociology, 7(1980): 159-180.

Leung, Yee. “Locational Choice, A Fuzzy Set Approach.” Geographical Bulletin, 15(1979): 28-34.

PUBLICATIONS –REFEREED ENCYCLOPEDIA AND HANDBOOK:

Leung, Yee. “Fuzzy Modeling in Spatial Analysis”. Handbook of Regional Science. 2021: 1-26. DOI:[10.1007/978-3-642-36203-3_114-2](https://doi.org/10.1007/978-3-642-36203-3_114-2).

Leung, Yee. “Fuzzy Set and Fuzzy Logic.” In A. Kobayashi (editor in chief), International Encyclopedia of Human Geography, Amsterdam: Elsevier, 2020, Vol. 5, pp.247-251.

Leung, Yee. “Fuzzy Logic and Fuzzy Sets.” In R. Kitchin and N. Thrift (eds.) The International Encyclopedia of Human Geography. Oxford: Elsevier, 2009.

Leung, Yee. “Fuzzy Sets Approach to Spatial Analysis.” In H.-J. Zimmermann (eds.) Practical Applications of Fuzzy Technologies, The Handbooks of Fuzzy Sets Series. Massachusetts: Kluwer, 1999, pp. 267-300.

Leung, Yee. “Conflict Resolution: Fuzzy-Ideal Concepts.” In M.G. Singh et al. (eds.) Systems and Control Encyclopedia. U.K.: Pergamon, 1988, pp. 773-776.

PUBLICATIONS – REFEREED BOOK CHAPTERS:

(Goodchild, Michael; Lin, Chih-Chang; and) **Leung, Yee.** “Visualizing Fuzzy Maps.” In H.M. Hearnshaw and D.J. Unwin (eds.) Visualization in Geographical Information Systems. Chichester: Wiley, 1994, pp. 158-167.

Leung, Yee. “Hierarchical Programming with Fuzzy Objectives and Constraints.” In J. Kacprzyk and S.A. Orlovski (eds.) Optimization Models using Fuzzy Sets and Possibility Theory. Dordrecht: D. Reidel, 1987, pp. 245-257.

Leung, Yee. “A Linguistically-based Regional Classification System.” In P. Nijkamp, H. Leitner, and N. Wrigley (eds.) Measuring the Unmeasurable. Dordrecht: Martinus Nijhoff, 1985, pp. 451-486.

Leung, Yee. “Urban and Regional Planning with Fuzzy Information.” In L. Chatterjee and P. Nijkamp (eds.) Urban and Regional Policy Analysis in Developing Countries. England: Gower, 1983, pp. 231-249.

Leung, Yee. “A Concept of a Fuzzy Ideal for Multicriteria Conflict Resolution.” In P.P. Wang (ed.) Advances in Fuzzy Set, Possibility Theory, and Applications. N.Y.: Plenum, 1983, pp. 387-403.

Leung, Yee. “A Value-based Approach to Conflict Resolution Involving Multiple Objectives and Multiple Decision-making Units.” In W. Isard and Y. Nagao (eds.) International and Regional Conflicts: Analytic Approaches. Cambridge: Ballinger, 1983, Chapter 4.

Leung, Yee. “Dynamic Conflict Resolution through a Theory of a Displaced Fuzzy Ideal.” In M.M. Gupta and E. Sanchez (eds.) Approximate Reasoning in Decision Analysis. Amsterdam: North-Holland, 1982, pp. 381-390.

Leung, Yee. “Market Area Separation in a Fuzzy Environment.” In R.R. Yager (ed.) Fuzzy Set and Possibility Theory: Recent Developments. N.Y.: Pergamon, 1982, pp. 551-561.

Leung, Yee. “A Fuzzy Set Procedure for Project Selection with Hierarchical Objectives.” In P.P. Wang and S.K. Chang (eds.) Fuzzy Sets – Theory and Applications to Policy Analysis and Information Systems. N.Y.: Plenum, 1980, pp. 329-340.

2. Geographical Information Systems and Intelligent Spatial Decision Support Systems

This research stream attempts to solve basic conceptual problems in geographical information systems. In particular, a rigorous statistical framework for the analysis and propagation of errors in geographical information systems has been developed. It corrects some ambiguous and erroneous concepts in current analyses of uncertainty in spatial information systems, and provides powerful algorithms for exact and approximate computations. The research on intelligent spatial decision support systems capitalizes on the power of artificial intelligence, geographical knowledge and machine efficiency to model highly complex data and to mimic human reasoning through the integrated employment of methods in artificial intelligence, mathematics, statistics, non-linear analysis and information theory.

PUBLICATIONS – REFEREED BOOKS:

Leung, Yee. Digital Twins of Cities – Modeling Urban Dynamics and Complexities. Berlin: Springer, 2026, 203 pages.

Leung, Yee. Intelligent Spatial Decision Support Systems. Berlin: Springer-Verlag, 1997, 470 pages.

PUBLICATIONS – REFEREED JOURNAL ARTICLES:

(Yi, Wei-Ying ; Liu, Peng-Fei ; Lo, Sheung-Lai; Chan, Ya-Fen; Zhou ,Yu ;) **Leung , Yee;** (Woo ,Kam-Sang ; Lee, Alex Pui-Wai ; Chen, Jia-Min; Leung, Kwong Sak). “Towards Personalized Healthcare in Cardiac Population: The Development of a Wearable ECG Monitoring System, an ECG Lossy Compression Schema, and a ResNet-Based AF Detector”. July 2022. DOI:[10.48550/arXiv.2207.05138](https://doi.org/10.48550/arXiv.2207.05138).

(Yi, Wei-Ying; Zhou, Yu ; Chan, Ya-Fen;) **Leung, Yee** ; (Woo, Kam-Sang ; Che, Wen-Wei ; Lau, Kai-Hon ; Chen, Jia-Min; Leung , Kwong Sak). “Field Evaluation of Four Low-cost PM Sensors and Design, Development and Field Evaluation of a Wearable PM Exposure Monitoring System”. Journal of Latex Class files. 1(2022). DOI:[10.48550/arXiv.2207.05140](https://doi.org/10.48550/arXiv.2207.05140).

(Yao, Kaixuan; Cao, Feilong;) **Leung, Yee;** (Liang, Jiye). “Deep Neural Network Compression through Interpretability-Based Filter Pruning”. Pattern Recognition, 119(2021):108056. DOI:[10.1016/j.patcog.2021.108056](https://doi.org/10.1016/j.patcog.2021.108056).

(Jia, Junxiong; Zhao, Qian; Xu, Zongben; Meng, Deyu;) **Leung, Yee.** “Variational Bayes' Method for Functions with Applications to Some Inverse Problems”. SIAM Journal on Scientific Computing, 43 (2021): A355-A383. DOI:[10.1137/19M130409X](https://doi.org/10.1137/19M130409X).

(Chen, Feng;) **Leung, Yee;** (Mei, Changlin; Fung, Tung). “Backfitting Estimation for Geographically Weighted Regression Models with Spatial Autocorrelation in the Response”. *Geographical Analysis* 54(2021): 357-381. DOI:[10.1111/gean.12289](https://doi.org/10.1111/gean.12289).

(Zhang, Wenbin; Ge, Yong; **Leung, Yee;** (Zhou, Yu). “A georeferenced graph model for geospatial data matching by optimising measures of similarity across multiple scales”. *International Journal of Geographical Information Science*. 35 (2021): 2339-2355. DOI:[10.1080/13658816.2020.1858301](https://doi.org/10.1080/13658816.2020.1858301).

(Lo, Sheung-Lai; Leung, Kwong Sak;) **Leung, Yee.** “Evaluating the LiDAR and Kinect Calibration Methods and Application”. April 2021. DOI:[10.1109/ICCRE51898.2021.9435662](https://doi.org/10.1109/ICCRE51898.2021.9435662). Conference: 2021 6th International Conference on Control and Robotics Engineering (ICCRE).

(Zhang, Wen-Bin; Ge, Yong;) **Leung, Yee;** (and Zhou, Yu). “A georeferenced graph model for geospatial data matching by optimising measures of similarity across multiple scales”. *International Journal of Geographical Information Science*, (2020). DOI:[10.1080/13658816.2020.1858301](https://doi.org/10.1080/13658816.2020.1858301).

Leung, Yee*; (Zhou, Yu; Lam, Ka-Yu; Fung, Tung; Cheung, Kwan-Yau; Kim, Taehong, and Jung Hanmin). “Integration of air pollution data collected by mobile sensors and ground-based stations to derive a spatiotemporal air pollution profile of a city”. *International Journal of Geographical Information Science*, (2019): 2218-2240. DOI: [10.1080/13658816.2019.1633468](https://doi.org/10.1080/13658816.2019.1633468).

(Xue, Jie;) **Leung, Yee***; (and Fung, Tung). “An Unmixing-Based Bayesian Model for Spatio-Temporal Satellite Image Fusion in Heterogeneous Landscapes”, *Remote Sensing*, 11 (2019): 324, DOI: [10.3390/rs11030324](https://doi.org/10.3390/rs11030324).

(Ying, Hanchi;) **Leung, Yee***; (Cao, Feilong, Fung, Tung, and Xue, Jie). “Sparsity-Based Spatiotemporal Fusion via Adaptive Multi-Band Constraints”, *Remote Sensing*, 10 (2018): 1646, DOI: [10.3390/rs10101646](https://doi.org/10.3390/rs10101646).

Leung, Yee*; (Leung, Kwong-Sak; Wong, Man-Hon; Mak, Terrence; Cheung, Kwan-Yau; Lo, Leung-Yau; Yi, Wei-Ying; and Dong, Yuan-Lin). "An Integrated Web-based Air Pollution Decision Support System – A Prototype". *International Journal of Geographical Information Systems*, 32 (2018): 1787-1814.

(Wang, Yao; Peng, Jiangjun; Zhao, Qian;) **Leung, Yee;** (Zhao, Xi-Le; Meng, Deyu). "Hyperspectral Image Restoration via Total Variation Regularized Low-Rank Tensor Decomposition". *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 11 (2018): 1227-1243.

(Yi, Wei-Ying; Leung, Kwong-Sak and) **Leung, Yee.** "A Modular Plug-And-Play Sensor System for Urban Air Pollution Monitoring: Design, Implementation and Evaluation". *Sensors*, 18 (2018):.

(Xue, Jie;) **Leung, Yee***; (and Tung Fung). "A Bayesian Data Fusion Approach to Spatio-Temporal Fusion of Remotely Sensed Images". Remote Sensing, 9 (2017): 1310; doi: 10.3390/rs9121310.

(XUE Jie;) **Leung, Yee***; (and MA Jiang-Hong). "High-order Taylor series expansion methods for error propagation in geographic information systems". Journal of Geographical Systems, 17 (2015) :187-206.

(WU Wei-zhi) and **LEUNG Yee**. "Optimal scale selection for multi-scale decision tables". International Journal of Approximate Reasoning, 54 (2013), 1107-1129.

Leung, Yee*; (M. H. Wong, K. C. Wong, W. Zhang, and K. S. Leung). "A Novel Web-Based System for Tropical Cyclone Analysis and Prediction." International Journal of Geographical Information Science, 26 (2012), 75-97.

(Ge, Yong;) **Leung, Yee**; (Ma, Jianghong; and Wang, Jinfeng). "Modelling for Registration of Remotely Sensed Imagery when Reference Control Points Contain Error." Science in China: Series D Earth Sciences, 19(2006): 739-746.

Leung, Yee*; (Lee, Yuk; Lam, Kin Che; Lin, Kui; and Zeng, Fantan). "An Environmental Decision Support System for the Management of Water Pollution in Tidal River Network." International Journal of Geographical Information Science, 4(2005): 483-500.

(Anh, Vo;) **Leung, Yee**; (Lam, Kin Che; and Yu, Z.) "Multifractal Characterization of Hong Kong Air Quality Data." Environmetrics, 16(2005): 1-12.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). "A General Framework for Error Analysis in Measurement-Based GIS, Part 1: The Basic Measurement-Error Model and Related Concepts." Journal of Geographical Systems, 6(2004): 325-354.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). "A General Framework for Error Analysis in Measurement-Based GIS, Part 2: The Algebra-Based Probability Model for Point-in-Polygon Analysis." Journal of Geographical Systems, 6(2004): 355-380.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). "A General Framework for Error Analysis in Measurement-Based GIS, Part 3: Error Analysis in Intersections and Overlays." Journal of Geographical Systems, 6(2004): 381-402.

Leung, Yee*; (Ma, Jiang-Hong; and Goodchild, Michael F.). "A General Framework for Error Analysis in Measurement-Based GIS, Part 4: Error Analysis in Length and Area Measurements." Journal of Geographical Systems, 6(2004): 403-428.

(Fung, Tung;) **Leung, Yee**; (and Lin, Hui). "From Paper Maps to Virtual Reality – A View from Hong Kong." The Cartographic Journal, 41(2004): 261-264.

Leung, Yee; (Zhang, Jiang-She; and Xu, Zong-Ben). “Clustering by Scale-Space Filtering.” IEEE Transactions on Pattern Analysis and Machine Intelligence, 22(2000): 1396-1410.

Leung, Yee. “Some Thoughts on Spatial Data and Structure Analysis.” Journal of Geographical Systems, 2(2000), 107-110.

Leung, Yee*; (Mei, Chang-Lin; and Zhang, Wen-Xiu). “Testing for Spatial Autocorrelation among the Residuals of the Geographically Weighted Regression.” Environment and Planning A, 32(2000), 871-890.

Leung, Yee*; (Mei, Chang-Lin; and Zhang, Wen-Xiu). “Statistical Tests for Spatial Non-Stationarity Based on Geographically Weighted Regression Model.” Environment and Planning A, 32(2000), 9-32.

Leung, Yee*; (Leung, Kwong Sak; and He, Jianzhong). “A Generic Concept-Based Object Oriented Geographical Information System.” International Journal of Geographical Information Science, 13(1999), 475-498.

Leung, Yee; (and Yan, Jian-ping). “A Locational Error Model for Spatial Features.” International Journal of Geographical Information Science, 12(1998): 607-620.

Leung, Yee*; (Leung, Kwong-sak; and Lau, Chi Keung). “A Development Shell for Intelligent Spatial Decision Support Systems: 1, Concepts and Tools.” Geographical Systems, The International Journal of Geographical Information, Analysis, Theory and Decision, 4(1997): 19-37.

Leung, Yee*; (Leung, Kwong-sak; Zhao, Shi-pang; and Lau, Chi Keung). “A Development Shell for Intelligent Spatial Decision Support Systems: 2, An Application in Flood Simulation and Damage Assessment.” Geographical Systems, The International Journal of Geographical Information, Analysis, Theory and Decision, 4(1997): 39-57.

Leung, Yee*; (and Yan, Jian-ping). “Point-in-Polygon Analysis under Certainty and Uncertainty.” GeoInformatica: An International Journal on Advances of Computer Science for Geographic Information Systems, 1(1997): 93-114.

Leung, Yee*; (and Yan, Jian-ping). “A Note on the Fluctuation of Flows under the Entropy Principle.” Transportation Research – B, 31(1997): 417-423.

(Wong, R.K.; Fung, T.; Leung, K.S.; and) **Leung, Yee.** “The Compression of a Sequence of Satellite Images Based on Change Detection.” International Journal of Remote Sensing, 18(1997): 2427-2436.

Leung, Yee*; (and Leung, Kwong-sak). “An Intelligent Expert System Shell for Knowledge-based Geographic Information Systems: 1, The Tools.” International Journal of Geographical Information Systems, 7(1993): 189-199.

Leung, Yee*; (and Leung, Kwong-sak.) “An Intelligent Expert System Shell for Knowledge-based Geographic Information Systems: 2, Some Applications.” International Journal of Geographical Information Systems, 7(1993): 201-213.

PUBLICATIONS – REFEREED ENCYCLOPEDIA AND HANDBOOK:

Leung, Yee. “Artificial Intelligence and Expert Systems.” In A. Kobayashi (editor in chief), International Encyclopedia of Human Geography, Amsterdam: Elsevier, 2020, Vol. 1, pp.209-215.

Leung, Yee. “Artificial Intelligence and Expert Systems.” In R. Kitchin and N. Thrift (eds.) The International Encyclopedia of Human Geography. Oxford: Elsevier, 2009.

PUBLICATIONS – REFEREED BOOK CHAPTERS:

Leung, Yee. “A Hybrid Connectionist Expert System for Spatial Inference and Analysis.” In A. Reggiani (ed.) Spatial Economic Science: New Frontiers in Theory and Methodology. Berlin: Springer-Verlag, 2000, pp. 149-187. **Leung, Yee.** “Feedforward Neural Network Models for Spatial Data Classification and Rule Learning.” In M.M. Fischer and A. Getis (eds.) Recent Developments in Spatial Analysis, Spatial Statistics, Behavioural Modelling and Computational Intelligence. Berlin: Springer-Verlag, 1997, pp. 337-359.

Leung, Yee. “Towards the Development of an Intelligent Spatial Decision Support System.” In M.M. Fischer and P. Nijkamp (eds.) Geographic Information Systems, Spatial Modelling and Policy Evaluation. Berlin: Springer-Verlag, 1992, pp. 131-145.

(Leung, Kwong-sak;) **Leung, Yee;** (and Wong, Man-hon). “The Integration of Rule-based and Procedural Methods to Solve Optimization Problems through Expert-System Technology.” In J.L. Verdegay and M. Delgado (eds.) The Interface between Artificial Intelligence and Operations Research in Fuzzy Environment, IRS 95. Berlin: Verlag TÜV Rheinland, 1989, pp. 157-176.

3. Spatial Analysis and Spatial Data Mining

This area of research involves the development of novel ideas and methods to analyse complicated spatial structures and processes. The theoretical formulations and algorithms developed can effectively unravel, for example, seismic belts, active seismic episodes, temperature variations, tropical cyclone movements, spatial and temporal outbreaks of infectious diseases from the spatial and temporal data. Identification of land covers, physical features and natural resources hidden in remote sensing and geo-referenced data can also be accomplished. Furthermore, the research has constructed novel neural network and evolutionary computation models for effective pattern recognition, classification of remotely sensed images, and optimization of transportation and communication networks; multifractal models for the study of scaling behaviour and long-range dependency of spatial and temporal processes across multiple scales.

PUBLICATIONS – REFEREED BOOKS:

Leung, Yee. Digital Twins of Cities – Modeling Urban Dynamics and Complexities. Berlin: Springer, 2026, 203 pages.

Leung, Yee. Knowledge Discovery in Spatial Data. Berlin: Springer-Verlag, 2010, 360 pages

(張文修，) 梁怡 (**Leung, Yee**)。遺傳算法的數學基礎 (Mathematical Foundations for Genetic Algorithms)。西安:西安交通大學出版社，2000(第一版)；2003(第二版)，170 頁。(in Chinese)

(張文修，) 梁怡 (**Leung, Yee**)，(吳偉志)。信息系統與知識發現 (Information Systems and Knowledge Discovery)。北京:科學出版社，2003，244 頁。(in Chinese)

(Fischer, Manfred M.; and) **Leung, Yee** (Eds.). Geocomputational Modelling: Techniques and Applications. Berlin: Springer-Verlag, 2001, 275 pages.

PUBLICATIONS – REFEREED JOURNAL ARTICLES:

(Shi, Guang ;) **Leung, Yee;** (Zhang, Kaibing; Xue, Dinghua ; Shi, Hongyu; Yang, Shuyun; Zhou, Yue). “An interpretable spatiotemporal method with a composite attention mechanism for the prediction of air pollution with stable and dynamic spatial relationships”. Expert Systems with Applications, 302 (2026): 130521.

(Chen, Feng; Zhou, Yu;) **Leung, Yee.** “Testing non-stationarity of spatial relationships under the multiscale effects. Journal of Geographical Systems, 27 (2025): 499-522. DOI:[10.1007/s10109-025-00474-3](https://doi.org/10.1007/s10109-025-00474-3).

(Shi, Guang;) **Leung, Yee**; (Zhang, Jianshe; Zhou, Yu). “Modeling the air pollution process using a novel multi-site and multi-scale method with adaptive utilization of spatiotemporal information”. *Chemosphere*, 349 (2024):140799. DOI:[10.1016/j.chemosphere.2024.140799](https://doi.org/10.1016/j.chemosphere.2024.140799).

(Chen, Mingming; Ma, Jianghong;) **Leung, Yee**. “The Slash Power Normal Distribution with Application to Pollution Data”. *Mathematical Problems in Engineering*. 2022. DOI:[10.1155/2022/7086747](https://doi.org/10.1155/2022/7086747).

(Chen, Feng; Meyer, Philipp G. ; Kantz, Holger; Fung, Tung;) **Leung, Yee**; (Mei, Changlin; Zhou, Yu). “Trends in auto-correlated temperature series”. *Theoretical and Applied Climatology*. 147(2022): 1577-1588. DOI:[10.1007/s00704-021-03893-6](https://doi.org/10.1007/s00704-021-03893-6).

(Zhang, Zhi; Jing, Li; Fung, Tung; Yu, Huayi; Mei, Changlin;) **Leung, Yee**; (Zhou, Yu). “Multiscale geographically and temporally weighted regression with a unilateral temporal weighting scheme and its application in the analysis of spatiotemporal characteristics of house prices in Beijing”. *International Journal of Geographical Information Science*, (2021):1-25. DOI:[10.1080/13658816.2021.1912348](https://doi.org/10.1080/13658816.2021.1912348).

(Ding, Weifu;) **Leung, Yee**; (Zhang, Jianshe; Fung, Tung). “A hierarchical Bayesian model for the analysis of space-time air pollutant concentrations and an application to air pollution analysis in Northern China”. *Stochastic Environmental Research and Risk Assessment*, 35(2021):2237-2271. DOI:[10.1007/s00477-021-02027-8](https://doi.org/10.1007/s00477-021-02027-8).

(Lo, Sheung-Lai; Leung, Kwong Sak;) **Leung, Yee**. “Evaluating the LiDAR and Kinect Calibration Methods and Application”. April 2021. DOI:[10.1109/ICCRE51898.2021.9435662](https://doi.org/10.1109/ICCRE51898.2021.9435662). Conference: 2021 6th International Conference on Control and Robotics Engineering (ICCRE).

(Chen, Feng;) **Leung, Yee**; (Mei, Changlin; Fung, Tung). “Backfitting Estimation for Geographically Weighted Regression Models with Spatial Autocorrelation in the Response”. *Geographical Analysis* 54(2021): 357-381. DOI:[10.1111/gean.12289](https://doi.org/10.1111/gean.12289).

(Zhang, Wenbin; Ge, Yong; **Leung, Yee**; (Zhou, Yu). “A georeferenced graph model for geospatial data matching by optimising measures of similarity across multiple scales”. *International Journal of Geographical Information Science*. 35 (2021): 2339-2355. DOI:[10.1080/13658816.2020.1858301](https://doi.org/10.1080/13658816.2020.1858301).

(Guang, Shi;) **Leung, Yee**; (Zhang, Jiang She; Fung, Tung). “A novel method for identifying hotspots and forecasting air quality through an adaptive utilization of spatiotemporal information of multiple factors”. *The Science of The Total Environment*, 759 (2020) :143513. DOI:[10.1016/j.scitotenv.2020.143513](https://doi.org/10.1016/j.scitotenv.2020.143513).

(Liu, Jin-Long; Yu, Zuguo;) **Leung, Yee**; (Fung, Tung; Zhou, Yu). “Fractal analysis of recurrence networks constructed from the two-dimensional fractional Brownian motions”. *Chaos*, 30(2020):113123. DOI:[10.1063/5.0003884](https://doi.org/10.1063/5.0003884).

(Zhou, Yu;), **Leung, Yee***; (and Zhang, Wen-Bin). "A location-and-form based distance for geographical analysis". Annals of the Association of American Geographers, (2020), DOI:10.1080/24694452.2020.1785269

(Wu, Weizhi and) **Leung, Yee**. "A comparison study of optimal scale combination selection in generalized multi-scale decision tables". International Journal of Machine Learning and Cybernetics, (2020) 11, 961–972, DOI: 10.1007/s13042-019-00954-1.

(Yue, Zongsheng; Yong, Hongwei; Meng, Deyu; Zhao, Qian;) **Leung, Yee**; (and Zhang, Lei.). "Robust Multiview Subspace Learning With Nonindependently and Nonidentically Distributed Complex Noise". IEEE Transactions on Neural Networks and Learning Systems, (2020): 1070-1084. DOI:10.1109/TNNS.2019.2917328.

(Li, Dechao), **Leung, Yee**; (and Wu, Weizhi). "Multiobjective interval linear programming in admissible-order vector space", Information Sciences, 486 (2019):1-19, DOI: 10.1016/j.ins.2019.02.012.

(Wang, Zhenzhen; He, Sylvia Y.; and) **Leung, Yee**. "Applying mobile phone data to travel behaviour research: A literature review", Travel Behaviour and Society, 11 (2018): 141-155, DOI: 10.1016/j.tbs.2017.02.005.

(Kwok, Tin Fai; Xu, Yuan; Liu, Xiao; and) **Leung, Yee**. "The impacts of economic structure on China's carbon dioxide emissions: an analysis with reference to other East Asian economies", Climate Policy, 18 (2018): 1235-1245, DOI: 10.1080/14693062.2017.1418282.

(Wang, Yao; Peng, Jiangjun; Zhao, Qian;) **Leung, Yee**; (Zhao, Xi-Le, and Meng, Deyu). "Hyperspectral Image Restoration Via Total Variation Regularized Low-Rank Tensor Decomposition", IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 11 (2018): 1227-1243, DOI: 10.1109/JSTARS.2017.2779539.

(Lo, Kin Ming; Yi, Wei Ying; Wong, Pak Kan; Leung, Kwong Sak; and) **Leung Yee**; (and Mak Sui Tung.). "A Genetic Algorithm with New Local Operators for Multiple Traveling Salesman Problems". International Journal of Computational Intelligence Systems, 11 (2018): 692-705.

(Yi, Wei-Ying; Leung, Kwong-Sak; and) **Leung, Yee**. "A Modular Plug-And-Play Sensor System for Urban Air Pollution Monitoring: Design, Implementation and Evaluation". Sensors, 18(2018).

(Wang, Yao; Lin, Lin; Zhao, Qian; Yue, Tianwei; Meng, Deyu; and) **Leung, Yee**. "Compressive Sensing of Hyperspectral Images via Joint Tensor Tucker Decomposition and Weighted Total Variation Regularization". IEEE Geoscience and Remote Sensing Letters, 14 (2017): 2457-2461.

(Liu, Xiao;) **Leung, Yee***; (Xu, Yuan; and Yung, Linda Chor Wing). "The effect of carbon tax on carbon emission abatement and GDP: a case study". Journal of Geographical Systems, 19 (2017): 399-414.

Leung, Yee*; (Li, Rongrong; and Ji, Nannan). "Application of extended Dempster–Shafer theory of evidence in accident probability estimation for dangerous goods transportation". Journal of Geographical Systems, 19 (2017): 249-271.

(Zhou, Yu;) **Leung, Yee***; (and Chan, Lung Sang). "Oscillatory tendency of interevent direction in earthquake sequences". Physica A, 478 (2017): 120-130.

(Ding, Weifu; Zhang, Jianshe*; and) **Leung, Yee**. "Prediction of air pollutant concentration based on sparse response back-propagation training feedforward neural networks". Environmental Science and Pollution Research, 23 (2016): 19481-19494.

(Luo, Ming;) **Leung, Yee***; (Hans, F. Graf; Michael, Herzog; and Zhang, Wei). "Interannual variability of the onset of the South China Sea summer monsoon". International Journal of Climatology, 36 (2016): 550-562.

(Zhou, Yu; Luo, Ming; and) **Leung, Yee***. "On the detection of precipitation dependence on temperature". Geophysical Research Letters, 43 (2016): 4555-4565.

(Zhou, Yu; Fung, Tung; and) **Leung, Yee**. "Improved triangular prism methods for fractal analysis of remotely sensed images". Computers & Geosciences, 90 (2016): 64-77.

(Yi, Weiyang; Lo, Kin Ming; Mak, T; Leung, Kwong Sak;) **Leung, Yee**; (and Meng, Helen). "A Survey of Wireless Sensor Network Based Air Pollution Monitoring Systems". Sensors, 15 (2015): 31392-31427.

(Liu, Lu;) and **Leung, Yee***. "A Study of Urban Expansion of Prefectural-Level Cities in South China Using Night-Time Light Images". International Journal of Remote Sensing, 36 (2015): 5557-5575.

(Luo, Ming;) and **Leung, Yee***; (Zhou, Yu; and Zhang, Wei). "Scaling Behaviors of Global Sea Surface Temperature". Journal of Climate, 28 (2015): 3122-3132.

(Yu, Zu-guo;) **Leung, Yee**; (Chen, Yongqin; Zhang, Qiang; Anh, Vo; and Zhou, Yu). "Multifractal analyses of daily rainfall time series in Pearl River basin of China". Physica A, 405 (2014):193–202.

(Wu, Dan; Xu, Yuan;) **Leung, Yee**; (and Yung Chor Wing). "The Behavioral Impacts of Firm-level Energy-Conservation Goals in China's 11th Five-Year Plan". Environmental Science & Technology, 49 (2015): 85–92.

(Luo, Ming;) **Leung, Yee***; (Zhou, Yu; and Zhang, Wei). "Scaling Behaviors of Global Sea Surface Temperature". Journal of Climate, 28 (2015): 3122-3132.

(Luo, Ming;) **Leung, Yee***; (Graf, Hans-f; Herzog, Michael and Zhang, Wei). "Interannual variability of the onset of the South China Sea summer monsoon". International Journal of Climatology, 36 (2016): 550-562.

(Ge, Erjia) and **Leung, Yee***. "Detection of Crossover Time Scales in Multifractal Detrended Fluctuation Analysis". Journal of Geographical Systems, 15 (2013): 115-147.

(Zhou, Yu;) **Leung, Yee***; (and Yu, Zu-guo). "Relationships of exponents in two-dimensional multifractal detrended fluctuation analysis". Physical Review E, 87 (2013): 012921(1-4).

(LI, Rongrong;) **Leung, Yee***; (Huang, Bo and Lin, Hui). "A genetic algorithm for multiobjective dangerous goods route planning". International Journal of Geographical Information Science, 27 (2013):1073-1089.

(Zhang, Wei;) **Leung, Yee***; (and Chan, Johnny C. L.). "The Analysis of Tropical Cyclone Tracks in Western North Pacific through Data Mining, Part I: Tropical Cyclone Recurvature". Journal of Applied Meteorology and Climatology, 52 (2013):1394-1416.

(Zhang, Wei;) **Leung, Yee***; (and Chan, Johnny C. L.). "The Analysis of Tropical Cyclone Tracks in Western North Pacific through Data Mining, Part II: Tropical Cyclone Landfall". Journal of Applied Meteorology and Climatology, 52 (2013): 38 1417-1432.

(Zhang, Wei;) **Leung, Yee***; (and Min, Jin-Zhong). "North Pacific Gyre Oscillation and the Occurrence of Western North Pacific Tropical Cyclones". Geophysical Research Letters, 40 (2013): 5205-5211.

(Zhou, Yu;) **Leung, Yee***; (and Ma, Jian-min). "Empirical study of the scaling behavior of the amplitude-frequency distribution of the Hilbert-Huang transform and its application in sunspot time series analysis ". Physica A, 392 (2012): 1336-1346.

(Zhang, Wei;) **Leung, Yee***; (and Wang, Yuenfei) "Cluster Analysis of Post-landfall Tracks of Landfalling Tropical Cyclones over China". Climate Dynamics, 40 (2012): 1237-1255.

(LI, Rongrong;) **Leung, Yee***; (Lin Hui; and Huang, Bo). "An adaptive compromise programming method for multi-objective path optimization". Journal of Geographical Systems, (2012): 211-228.

(Ge, Erjia; Haining, Robert; Li, Chi Pang; Yu, Zuguo; Waye, Miu Yee; Chu, Ka Hou; and) **Leung, Yee***. "Using Knowledge Fusion to Analyze Avian Influenza H5N1 in East and Southeast Asia". *PloS One*, 7 (2012), e29617, 8 pages.

(Zhang, Wei; Hans Graf;) **Leung, Yee***; (and Herzog,Michael) .“Different El Nino Types and Tropical Cyclone Landfall in East Asia”. *Journal of Climate*, 25 (2012): 6510-6523.

Leung Yee*; (Ge, Erjia; and Yu, Zu-Guo). "Temporal Scaling Behavior of Avian Influenza A (H5N1): The Multifractal Detrended Fluctuation Analysis". *Annals of Association of American Geographers*, 101 (2011), 1221-1240.

(Tsang, Shun Wai, and) **Leung, Yee**. "A Theory-Based Cellular Automata for the Simulation of Land-Use Change". *Geographical Analysis*, 43(2011):142-171.

(LI, Rongrong, and) **Leung, Yee**. "Multi-objective Route Planning for Dangerous Goods Using Compromise Programming". *Journal of Geographical Systems* .13 (2011) :249-271. 2011.

(Meng, Deyu;) **Leung, Yee*** (and Xu, Zongben). "A New Quality Assessment Criterion for Nonlinear Dimensionality Reduction". *Neurocomputing* , 74 (2011): 941-948.

(Wu, Wei-zhi) and **Leung, Yee***. "Theory and Applications of Granular Labelled Partitions in Multi-scale Decision Tables". *Information Sciences* , 181(2011):3878-3897.

(Mi, Ju-sheng;) **Leung, Yee** (and Wu, Wei-zhi). "Dependence-space-based Attribute Reduction in Consistent Decision Tables". *Soft Computing*, 15 (2011):261-268.

(Mi, Ju-sheng;) **Leung, Yee** (and Wu, Wei-zhi). "Approaches to Attribute Reduction in Concept Lattices Induced by Axialities". *Knowledge-Based Systems*, 23 (2010): 504-511.

(Yang, Hong-zhi;) **Leung, Yee** and (Shao, Ming-wen). "Rule Acquisition and Attribute Reduction in Real Decision Formal Contexts". *Soft Computing* , 15 (2010): 1115-1128.

(Zhou, Yu and) **Leung, Yee***. "Multifractal Temporally Weighted Detrended Fluctuation Analysis and its Application in the Analysis of Scaling Behavior in Temperature Series". *Journal of Statistical Mechanics: Theory and Experiment* , 6 (2010):P06021, 26 pages.

(Zhou, Yu) and **Leung, Yee***. "Empirical Mode Decomposition and Long-range Correlation Analysis of Sunspot Time Series". *Journal of Statistical Mechanics: Theory and Experiment*, (2010):P12006, 23 pages.

(Huang, Yefang) and **Leung, Yee**. "Measuring Regional Inequality: A Comparison of Coefficient of Variation and Hoover Concentration Index". The Open Geography Journal ,2 (2009) :25-34.

(WU Wei-zhi;) **Leung, Yee** and (MI Ju-sheng). "On Generalized Fuzzy Belief Functions in Infinite Spaces". IEEE Transactions on Fuzzy Systems , 17 (2009) 385-397.

Leung, Yee; (Fischer, M. M.; Wu, W. Z. and Mi, J. S). "A Rough Set Approach for the Discovering of Classification Rules in Interval-valued Information Systems". International Journal of Approximate Reasoning ,47(2008): 233-246.

Leung, Yee; (Ma, Jian-min; Zhang, Wen-xiu and Li, Tong-jun). "Dependence-space-based Attribute Reductions in Inconsistent Decision Information Systems". International Journal of Approximate Reasoning ,49(2008):623-630.

Leung, Yee; (Fischer, Manfred M; Wu, Wei-Zhi; and Mi, Ju-Sheng). "A rough Set Approach for the Discovery of Classification Rules in Interval-Valued Information Systems." International Journal of Approximate Reasoning , 47(2008): 233-246.

Leung, Yee; (Ma, Jianmin; Zhang, Wenxiu; Li, Tongjun). "Dependence Space-based Knowledge Reductions in Inconsistent Decision Information Systems." International Journal of Approximation Reasoning , 49(2008): 623-630.

(Meng, Deyu;) **Leung, Yee**; (Xu, Zongben; Fung, Tung and Zhang, Qingfu). "Improving Geodesic Distance Estimation Based on Locally Linear Assumption". Pattern Recognition Letter , 29 (2008):862-870.

(Meng, Deyu;) **Leung, Yee**; (Fung, Tung and Xu, Zongben). "Nonlinear Dimensionality Reduction of Data Lying on the Multicluster Manifold". IEEE Transactions on Systems, Man, and Cybernetics - Part B: Cybernetics vol.38 no.4, pp.1111-1122. 2008.08.

(Meng, Deyu;) **Leung, Yee**, (Xu, Zongben; Fung, Tung; and Zhang, Qingfu). "Improving Geodesic Distance Estimation Based on Locally Linear Assumption." Pattern Recognition Letters, 29(2008): 862-870.

(Meng, Deyu;) **Leung, Yee**; (Fung, Tung, and Xu, Zongben). "Nonlinear Dimensionality Reduction of Data Lying on the Multicluster Manifold." IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics, 38(2008): 1111-1122.

Leung, Yee; (Fung Tung; Mi, Jusheng; and Wu, Weizhi). "A Rough Set Approach to the Discovery of Classification Rules in Spatial Data." International Journal of Geographical Information Science, 21(2007): 1033-1058.

(Wang, Min;) **Leung, Yee;** (Zhuo, Chenhu; and Pei, Tao). “A Mathematical Morphology Based Scale Space Method for the Mining of Linear Belts.” Data Mining and Knowledge Discovery, 12(2006):97-118.

Leung, Yee; (Luo, Jian-Cheng; Ma, Jiang-Hong; and Ming, Dong-Ping). “A New Method for Feature Mining in Remotely Sensed Images.” GeoInformatica, 10(2006): 295-312.

Leung, Yee; (Wu, Weizhi; and Zhang, Wenxiu). “Knowledge Acquisition in Incomplete Information Systems: A Rough Set Approach.” European Journal of Operational Research, 168(2006): 164-180.

(Jiao, Yongchang;) **Leung, Yee;** (Xu, Zongben; and Zhang, Jiangshe). “Variable Programming: A Generalized Minimax Problem. Part I: Models and Theory.” Computational Optimization and Applications, 30(2005): 229-261.

(Jiao, Yongchang;) **Leung, Yee;** (Xu, Zongben; and Zhang, Jiangshe). “Variable Programming: A Generalized Minimax Problem. Part II: Algorithms.” Computational Optimization and Applications, 30(2005): 263-295.

Leung, Yee; (Gao, Xingbao; and Chen, Kaizhou). “A Dual Neural Network for Solving Entropy-maximising Models.” Environment and Planning A, 36(2004): 879-919.

(Li, Deyu; Zhang, Bo; and) **Leung, Yee.** “On Knowledge Reduction in Inconsistent Decision Information Systems.” International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, 12(2004): 651-672.

(Luo, Jiancheng;) **Leung, Yee;** (Zheng, Jiang; and Ma, Jianghong). “An Elliptical Basis Function for the Classification of Remote Sensing Images.” Journal of Geographical Systems, 6(2004): 219-236.

(Dang, Chuangyin;) **Leung, Yee;** (Gao, Xingbao; and Chen, Kaizhou). “Neural Networks for Nonlinear and Mixed Complementarity Problems and Their Applications.” Neural Networks, 17(2)(2004): 271-283.

Leung, Yee; (Chen, Kaizhou; and Gao, Xingbao). “A High-Performance Feedback Neural Network for Solving Convex Nonlinear Programming Problems.” IEEE Transactions on Neural Networks, 14(6)(2003): 1469-1477.

Leung, Yee; (and Li, Deyu). “Maximal Consistent Block Technique for Rule Acquisition in Incomplete Information Systems.” Information Sciences, 153(2003): 85-106.

(Xu, Zong-Ben; Leung, Kwong-Sak; Liang, Yong; and) **Leung, Yee.** “Efficiency Speed-up Strategies for Evolutionary Computation: Fundamentals and Fast-GAs”. Applied Mathematics and Computation, 142(2003): 341-388.

(Chen, Kaizhou;) **Leung, Yee;** (Leung, Kwong-Sak; and Gao, Xingbao). “A Neural Network for Solving Nonlinear Programming Problems.” Neural Computing Applications, 11(2)(2002): 103-111.

(Xu, Zong-Ben; Jin, Hui-Dong; Leung, Kwong-Sak;) **Leung, Yee;** (and Wong, Chak-Kuen). “An automata network for performing combinatorial optimization”. Neurocomputing, 47(2)(2002): 59-83.

Leung, Yee; (Chen, Kai-Zhou; Jiao, Yong-Chang; Gao, Xing-Bao; and Leung, Kwong Sak). “A New Gradient-Based Neural Network for Solving Linear and Quadratic Programming Problems.” IEEE Transactions on Neural Network, 12(5)(2001): 1074-1083.

Leung, Yee; (Ma, Jiang-Hong; and Zhang, Wen-Xiu). “A New Method for Mining Regression Classes in Large Data Sets.” IEEE Transactions on Pattern Analysis and Machine Intelligence, 23(2001): 5-21.

(Anh, V.V.; Lam, K.C.;;) **Leung, Yee;** (and Tieng, Q.M.). “Multifractal Analysis of Hong Kong Air Quality Data.” Environmetrics, 11(2000), 139-149.

(Huang, Chongfu; and) **Leung, Yee.** “Estimating the Relationship between Isoleismic Area and Earthquake Magnitude by a Hybrid Fuzzy-Neural-Network Method.” Fuzzy Sets and Systems, 107(1999), 131-146.

Leung, Yee; (Li, Guo; and Xu, Zong-ben). “A Genetic Algorithm for the Multiple Destination Routing Problems.” IEEE Transactions on Evolutionary Computation, 2(1998), 150-161.

Leung, Yee; (Dong, Tian-xin; and Xu, Zong-ben). “The Optimal Encodings for Biased Association in Linear Associative Memory.” Neural Networks, 11(1998): 877-884.

Leung, Yee; (Gao, Yong; and Xu, Zong-ben). “Degree of Population Diversity – A Perspective on Premature Convergence in Genetic Algorithms and its Markov Chain Analysis.” IEEE Transactions on Neural Networks, 8(1997): 1165-1176.

Leung, Yee; (Zhang, Jiang-she; and Xu, Zong-ben). “Neural Networks for Convex Hull Computation.” IEEE Transactions on Neural Networks, 8(1997): 601-611.

(Leung, Kwong-sak; Ji, Han-bing; and) **Leung, Yee.** “Adaptive Weighted Outer-product Learning Associative Memory.” IEEE Transactions on Systems, Man, and Cybernetics, 27(1997): 533-542.

(Xu, Zong-ben;) **Leung, Yee;** (and He, Xiang-wei). “Asymmetric Bidirectional Associative Memories.” IEEE Transactions on Systems, Man, and Cybernetics, 24(1994): 1558-1564.

Leung, Yee. “Inference with Spatial Knowledge: an Artificial Neural Network Approach.” Geographical Systems, The International Journal of Geographical Information, Analysis, Theory, and Decision, 1(1994): 103-121.

PUBLICATIONS – REFEREED BOOK CHAPTERS:

Leung, Yee. “Neural and Evolutionary Computation Methods for Spatial Classification and Knowledge Acquisition.” In M.M. Fischer and Y. Leung (eds.) GeoComputational Modeling – Techniques and Applications. Berlin: Springer-Verlag, 2001, pp.71-108.

Leung, Yee. “A Hybrid Connectionist Expert System for Spatial Inference and Analysis.” In A. Reggiani (ed.) Spatial Economic Science: New Frontiers in Theory and Methodology. Berlin: Springer-Verlag, 2000, pp. 149-187. **Leung, Yee.** “Feedforward Neural Network Models for Spatial Data Classification and Rule Learning.” In M.M. Fischer and A. Getis (eds.) Recent Developments in Spatial Analysis, Spatial Statistics, Behavioural Modelling and Computational Intelligence. Berlin: Springer-Verlag, 1997, pp. 337-359.

(Ji, Han-bing; Leung, Kwong-sak; and) **Leung, Yee.** “A Novel Encoding Strategy for Associative Memory.” In C.v.d. Malsburg, W.v. Seelen, J.C. Vorbruggen, and B. Sendhoff (eds.) Artificial Neural Networks – ICANN96. Berlin, Heidelberg, New York: Springer Verlag, Vol. 1112 of Lecture Notes in Computer Science, 1996, pp. 21-27.

(Leung, Kwong-sak;) **Leung, Yee;** (and Wong, Man-hon). “The Integration of Rule-based and Procedural Methods to Solve Optimization Problems through Expert-System Technology.” In J.L. Verdegay and M. Delgado (eds.) The Interface between Artificial Intelligence and Operations Research in Fuzzy Environment, IRS 95. Berlin: Verlag TÜV Rheinland, 1989, pp. 157-176.

Leung, Yee. “Maximum Entropy Estimation with Inexact Information.” In G.E. Lasker (ed.) Applied Systems and Cybernetics. Vol. VI. Toronto: Pergamon, 1981, pp. 2974-2979; also in R.R. Yager (ed.) Fuzzy Sets and Possibility Theory: Recent Development. N.Y.: Pergamon, 1982, pp. 32-37.