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Dr. LIONG, Shie-Yui
Principal Research Fellow
Tropical Marine Science Institute
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EXPERTISE

Hydroinformatics
Hydrology and Water Resources
Integrated Water Resources Management
Flow and Rainfall Forecasting
Multi-Objective and Multi Reservoir Networks Operation
Water Distribution Modeling

EDUCATION

Ph.D. : Hydraulics, 1977, Iowa Institute of Hydraulic Research, University of Iowa, USA
Dipl.-Ing. : Civil Engineering, 1973, University of Karlsruhe, Germany
High School: Jakarta, Indonesia

LANGUAGES (oral and written): English, German, Chinese, Indonesian.

TEACHING AND RESEARCH EXPERIENCE

07/04–present – Tropical Marine Science Institute (NUS), Principal Research Fellow

- Simulations of sea temperature, tidal elevations and ocean dynamics, and water quality with softcomputing techniques; Data Assimilation; integrated water resources management.

5/83-6/04–National University of Singapore (NUS), Lecturer, Senior Lecturer, Associate Professor

- Conducted research on (1) neural networks, genetic algorithm, genetic programming, fuzzy logics, chaos, support vector machine and their applications in hydrology and water resources; (2) Catchment modeling; (3) Multi-objective reservoir network system; (3) Water Distribution Modeling.

- Teaching (1) Fluid Mechanics; (2) Hydrology; (3) Hydraulics; (4) Water Resources Systems and Analysis.

8/78-5/83 – University of Mississippi, Assistant Professor

- Conducted research on groundwater flow modeling.

- Teaching (1) Fluid Mechanics; (2) Flow through Porous Media; (3) Hydrology; (4) Hydraulics.

77-78 -- George Washington University, Research Associate

73-77 – Iowa Institute of Hydraulics Research, University of Iowa, Research Assistant

SELECTED INTERNATIONAL JOURNAL PUBLICATIONS

1. Yu*, X.Y., and Liang, S.Y., “ Forecasting of Hydrologic Time Series with Ridge Regression in Feature Space,” Journal of Hydrology (in press).
2. Karunasinghe*, D.S.K, and Liang, S.Y., “Chaotic Time Series Prediction with a Global Model: Artificial Neural Network,” Journal of Hydrology, Vol. 323, 2006, pp. 92-105.
3. Atiquzzaman*, Md., Liang, S.Y., and Yu*, X.Y., “Alternative Decision Making in Water Distribution Network with NSGA-II”, Journal of Water Resources Planning and Management, ASCE, Vol.132, No. 2, 2006, pp. 122-126.
4. Doan*, C.D., Liang, S.Y., and Karunasinghe*, D.S.K., “Derivation of Effective and Efficient Data Set with Subtractive Clustering Method and Genetic Algorithm,” Journal of Hydroinformatics, Vol. 7, No. 4, 2005, pp. 219-233.

5. Liong, S.Y., Phoon, K.K., Pasha*, M.F.K., and Doan*, C.D., "Efficient Implementation of Inverse Approach Using Micro GA", Journal of Hydroinformatics, Vol. 7, No. 3, 2005, pp. 151-163.
6. Muttil*, N and Liong, S.Y., "A Superior Exploration-Exploitation Balance in Shuffled Complex Evolution", Journal of Hydraulic Engineering, ASCE, Vol 130, No.12, 2004, pp. 1202-1205.
7. Yu*, X.Y., Liong, S.Y., and Babovic, V., "EC-SVM Approach for Real Time Hydrologic Forecasting", Journal of Hydroinformatics, Vol. 6, No. 3, 2004, pp. 209-224.
8. Liong, S.Y., Gautam, T.R., Khu*, S.T., Babovic, V., Keijzer, M., and Muttil*, N., "Genetic Programming: A new Paradigm in Rainfall-Runoff Modeling", Journal of American Water Resources Association, Vol. 38, No. 3, 2002, pp. 705-718.
9. Liong, S.Y. and Sivapragasam*, C., "Flood Stage Forecasting with Support Vector Machine", Journal of American Water Resources Association, Vol. 38, No. 1, 2002, pp. 173-186.
10. Phoon, K.K., Islam*, M.N., Liaw, C.Y. and Liong S.Y., "A Practical Inverse Approach for Forecasting Nonlinear Hydrological Time Series", Journal of Hydrologic Engineering, ASCE, Vol. 7, No. 2, 2002, pp. 116-128.
11. Liong, S.Y., Khu*, S.T., and Chan, W.T., "Derivation of Pareto Front with Genetic Algorithm and Neural Network", Journal of Hydrologic Engineering, ASCE, Vol. 6, No. 1, 2001, pp. 56 – 61.
12. Liong, S.Y., Lim*, W.H., Kojiri, T., and Hori, T., "Advance Flood Forecasting for Flood Stricken Bangladesh with Fuzzy Reasoning Method", Hydrological Processes Vol. 14 (2000): 431-448.
13. Liong, S.Y., Lim, W.H.*, and Paudyal, G., "Real Time River Stage Forecasting for Flood Stricken Bangladesh: Neural Network Approach", Journal of Computing in Civil Engineering, ASCE, 14, No.1, 1999, pp. 1-8.
14. Sivakumar*, B., Liong S.Y., and Liaw, C.Y. " Evidence of Chaotic Behavior in Singapore Rainfall" Journal of American Water Resources Association, Vol. 34, No. 2, 1998, pp. 301-310.
15. Liong, S.Y., and Ibrahim, Y. "Estimation of peak runoff and runoff volume using response surface method" Journal of Water Resources Planning and Management, ASCE, Vol. 120, No.2, 1994, pp. 161-175.

* Past or current Ph.D. or Masters students under my sole supervision

HONORS AND AWARDS

A. Best Paper Awards:

1. "Best Paper Award" at the 13th Congress of International Association of Hydraulic Research – Asia Pacific Division (with Nitin Muttil, Ph.D student; 2002).
2. "Best Paper Award" at the 9th Congress of International Association of Hydraulic Research – Asia Pacific Division (Main Author; 1994).

B. Visiting Professors:

1. Invited Visiting Professor at University of Nice Sophia Antipolis, France, 3 – 24 December 2005; 16 Feb – 5 March 2006 (Erasmus Mundus Program in Hydroinformatics and Water Management).
2. Invited Visiting Professor at Technical University Darmstadt, Germany, 6 – 16 January 2004.
3. Visiting Professor at Technical University of Hamburg-Harburg, Germany, DAAD Fellowship, 1 – 23 December 2002.
4. Invited Visiting Professor at Disaster Prevention Research Institute of Kyoto University, Japan, 1 August - 30 October, 1998

C. Teaching Excellence:

1. Honors List of Faculty of Engineering, NUS, 2002/2003
2. Teaching Commendation 1999/2000 (top 20%) from Department of Civil Engineering, NUS.
3. Teaching Commendation 1996/1997 (top 20%) from Department of Civil Engineering, NUS.

D. Conference Chairmen:

1. Chairman, Hydroinformatics 2004 (6th International Conference on Hydroinformatics), Singapore (21 – 25 June 2004)
2. Chairman, 2nd APHW Conference (Asia Pacific Association of Hydrology and Water Resources), Singapore (5 – 8 July 2004)

E. Editor, Advisory Board of International Journals/Conferences:

1. Editor, Journal of Hydroinformatics, International Association of Hydraulic Research (2004 – date).
2. Editorial Board, Water International, Journal of the International Water Resources Association, IWRA (08/98 – 2003).
3. Advisory Board, 15th International Association of Hydraulic Engineering and Research – Asia Pacific Division, 7 – 10 August 2006, Madras, India.
4. Advisory Board, Hydroinformatics 2006, Nice, France.
5. Advisory Board, International Conference on Hydrological Sciences for Managing Water Resources in the Asian Developing World, 8-10 June 2006, Guangzhou, China.
6. Scientific Committee, International Conference on Modeling Tools for Environment and Resources Management & Integrated Water Resources Management, 6-10 June, 2005, Bangkok, Thailand.
7. Scientific Committee, International Symposium on Role of Water Sciences in Transboundary River Basin Management, 10- 12 March 2005, Ubon Ratchathani, Thailand.
8. Editorial Board, 9th International Conference on Civil and Structural Engineering Computing, 2 – 4 September, 2002, The Netherlands.
9. Advisory Board, Hydroinformatics 2002 Conference, Cardiff, UK.
10. Advisory Board, International Conference on Urban Hydrology for the 21st Century, Kuala Lumpur, Malaysia, 2002.
11. Advisory Board, 8th International Conference on Civil & Structural Engineering Computing, Eisenstadt, Austria, 2001.
12. Advisory Board, Hydroinformatics 2000 Conference, Iowa, USA.

F. Keynote/Invited Speakers:

1. Keynote Speaker, International Conference on Water, Environment, Energy, and Society, Roorkee, India, 18 -21 December, 2007.
2. Keynote Speaker, XXIV IUGG General Assembly, Perugia, Italy, 2 – 13 July 2007.
3. Keynote Speaker, International Symposium on Recent Advances in Water Resources Development and Management (RAWRDM-2005), IIT-Roorkee, 23-25 Nov 2005.
4. Keynote Speaker, International Conference on Modeling Tools for Environment and Resources Management & Integrated Water Resources Management, Bangkok, Thailand, 6 – 10 June 2005.
5. Keynote Speaker, 28th International Hydrology & Water Resources Symposium, Wollongong, Australia, 10 – 13 November 2003.
6. Keynote Speaker, First Asia-Pacific DHI Software Conference, Bangkok, Thailand, 17 – 18 June, 2002.
7. Invited Lecture on Artificial Neural Network: an Emerging Technology in Civil Engineering Education, University of Lampung, Indonesia, Dec 2001.
8. Invited Speaker on “Flood Prediction with AI Technologies” at Artificial Intelligence Symposium, Nagoya, Japan, April 2001.
9. Invited Speaker “Flood Prediction with AI Technologies” at seminar held for engineers at Tokyo Electric Power Ltd, Tokyo, Japan, April 2001.
10. Invited lecturer at the Advanced Workshop on Urban Stormwater Modelling and Analysis, Hanoi, Vietnam. Organized by UNESCO and DANIDA, Aug.1999.
11. Invited Lecturer Application of Neural Network in Water Resources, University of Lampung, Indonesia, July 1999.

12. Keynote Speaker at the International Workshop on System Intelligence for Water Resources Management. Invited by the Research Group on System Intelligence for Water Resources Management, Kyoto University, Japan, Nov. 1996.
13. Invited Lecturer at the International Advanced Workshop on River Flow Forecasting, University College Galway, Ireland, May 1995.
14. Invited Guest Speaker at the Basic Course in Water Resources Assessment, University of Technology Malaysia, Malaysia (organized by Malaysian National Committee for International Hydrological Programme, UNESCO, and Faculty of Civil Engineering of university of Technology Malaysia), July 1994.
15. Invited Lecturer at the Urban Hydrology Workshop, University of Gadjah Mada, Yogyakarta, Indonesia (appointed by Midwest Universities Consortium for International Activities, MUCIA, USA), Nov 1991.
16. Invited Lecturer at the Urban Hydrology Workshop, University of Gadjah Mada, Yogyakarta, Indonesia (appointed by Midwest Universities Consortium for International Activities, MUCIA, USA), Nov 1991.
17. Appointed by MUCIA to assist the hydraulics and hydrology graduate programme of University of Gadjah Mada, Yogyakarta, Indonesia, Nov 1988.

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- American Society of Civil Engineers
- International Association of Hydraulics Engineering and Research
- Asia Pacific Association of Hydrology and Water Resources
- Asia Oceania Geoscience Society
- Institution of Engineers Singapore
- Hydroinformatics Society (Singapore) -- President