



Department of Computer Science





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Message from the Head

In the Department of Computer Science at Hong Kong Baptist University, we take great pride in what we do, i.e., "to make computing schools and departments the pillars of future technological advancement and to nurture new generations of computing professionals and leaders who will pursue cutting-edge innovation, tackle socioeconomic development and moral issues, and strive to make the future computing-centric world a better place in which to live, work, and play." [IEEE Computer, 40(5):111, May 2007]

The Department consists of 18 full-time faculty and 10 supporting staff. They are dedicated and dynamic. Our faculty have a broad range of expertise and experience, as reflected in their teaching, programme development, research output, and active professional or scholarly services. They are active in exploring new research areas, producing high-impact publications, leading or participating in externally funded projects, offering consultancy, serving in editorial positions, and organizing major scientific events. Our faculty's research strength and leadership in several significant areas of Computer Science have become a valuable source of inspiration for students.

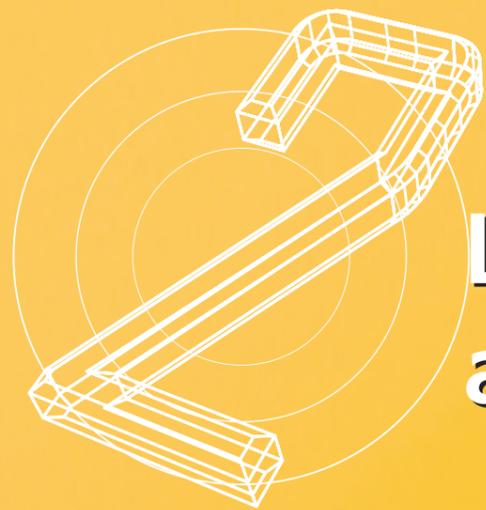
The Department has established an array of teaching and research programmes that are competitively positioned and reputable in the field. In parallel with the fast development of research-oriented PhD and MPhil degree programmes, the BSc (Hons) in Computing Studies (Information Systems) and BSc (Hons) in Computer Science programmes (since 1988) and

the MSc in Information Technology Management programme (since 2005) have all been well-received by students, and favorably recognized by the industry. Complementary to professionally-designed teaching programmes, the Department also offers faculty/industry-led mentoring, peer-support tutoring, internship/placement, summer IT workshops, and Elite/research training, apart from overseas exchange and attachment programmes provided by the University.

The Department is striving to remain a well-supported, conducive environment for excellence in learning, teaching, and research - as well as the place for creating value, discovering potential, and pursuing dreams, whether you are prospective students, new faculty, senior staff, or short-term visitors.

I hope that this booklet would give you a glimpse of our teaching and research programmes, areas of research strength, learning environment and facilities, and most importantly, the people in this very vibrant department.

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Professor and Head
Department of Computer Science



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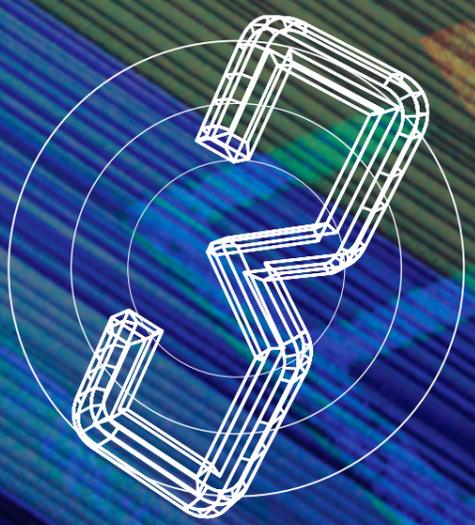
Jiming Liu is a Professor and the Head of the Department of Computer Science at Hong Kong Baptist University (HKBU), Hong Kong SAR, PRC. He received his Bachelor's degree in Physics from East China Normal University, Shanghai, PRC, his Master of Arts in Educational Technology from Concordia University, Montreal, Canada, and his Master of Engineering and PhD degrees in Electrical Engineering from McGill University, Montreal, Canada.

Prof. Liu's research interests include Self-Organizing Systems and Networks, Autonomy-Oriented Computing (AOC), and Web Intelligence (WI). His previous research has focused on the theories and applications of Autonomous Agents and Multi-Agent Systems (AAMAS), Robotics, Artificial Intelligence (AI), Human-Machine Interaction, Pattern Analysis, etc. His recent research work on AOC and Nature-Inspired Computing (NIC) was highlighted in Science, October 2006, 314: 389 (in Editors' Choice). Prof. Liu has contributed extensively to the scientific literature in those areas, and has served the academic and professional communities in various capacities.

Prof. Liu has given Keynote Talks at AWIC'07, RSEISP'07, RSKT 2006, AMT'06, and AWIC'05, and Invited Plenary Talks at KES'05, MMAS 2004, ISMIS'03, and IJCAI'03, among other conferences/workshops.

Selected Publications :

1. J. Liu and K.C. Tsui, "Toward Nature-Inspired Computing", Communications of the ACM, Vol. 49, No. 10, pp. 59-64, 2006.
2. J. Liu, X.L. Jin and Y.S. Wang, "Agent-Based Load Balancing on Homogeneous Minigrids: Macroscopic Modeling and Characterization", IEEE Transactions on Parallel and Distributed Systems, Vol. 16, No. 7, pp. 586-598, 2005.
3. J. Liu, X.L. Jin, and K.C. Tsui, "Autonomy Oriented Computing (AOC): From Problem Solving to Complex Systems Modeling", Kluwer Academic Publishers / Springer, 2005. (Research Monograph)
4. J. Liu, S.W. Zhang, and J. Yang, "Characterizing Web Usage Regularities with Information Foraging Agents", IEEE Transactions on Knowledge and Data Engineering, Vol. 16, No. 5, pp. 566-584, 2004.
5. J. Liu, "Autonomous Agents and Multi-Agent Systems: Explorations in Learning, Self-Organization, and Adaptive Computation", World Scientific Publishing, 2001.
(Research Monograph; Also translated into Chinese, and published by the Tsinghua University Press, PRC).



Faculty Profiles

**TANG, Yuan Yan** 唐遠炎

Chair Professor

BSc Chongqing, MEng Beijing Inst of Post & Telecom, PhD Concordia

Prof. Tang received a BSc degree in Electrical and Computer Engineering from Chongqing University, Chongqing, China, an MEng Degree in Electrical Engineering from the Beijing Institute of Post and Telecommunications, Beijing, China, and a PhD degree in Computer Science from Concordia University, Montreal, Canada.

He is presently a Chair Professor in the Department of Computer Science at Hong Kong Baptist University and Adjunct Professor in Computer Science at Concordia University. He was an Honorary Lecturer at the University of Hong Kong, and an Advisory Professor at many institutes in China. His current interests include Wavelet Theory and Applications, Pattern Recognition, Image Processing, Document Processing, Artificial Intelligence, Parallel Processing, Chinese Computing and VLSI Architecture. Prof. Tang has published more than 270 technical papers and is the author/co-author of 21 books on subjects ranging from electrical engineering to computer science. He has served as General Chair, Programme Chair and Committee Member for many international conferences. Prof. Tang was the General Chair of the 18th International Conference on Pattern Recognition (ICPR'06), which is the most important conference in the field of pattern recognition, and first time held in China, second time held in Asia. He is the Founder and Editor-in-Chief of International Journal on Wavelets, Multiresolution, and Information Processing (IJWMIP), and Associate Editors of several international journals. He is an IEEE Fellow and IAPR Fellow.

Selected Publications :

1. X.G. You and Y.Y. Tang, "Wavelet-based Approach to Character Skeleton", IEEE Transactions on Image Processing, Vol. 16, No. 3, pp. 1220-1231, 2007.
2. B. Fang and Y.Y. Tang, "Improved Class Statistics Estimation for Sparse Data Problems in Off-line Signature Verification", IEEE Transactions on Systems, Man, and Cybernetics, Part C, Vol. 35, No. 3, pp. 276-286, 2005.
3. Y.Y. Tang and X.G. You, "Skeletonization of Ribbon-like Shapes Based on A New Wavelet Function", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 25, No. 9, pp. 1118-1133, 2003.
4. Y.Y. Tang, F. Yang and J. Liu, "Basic Processes of Chinese Character Based on Cubic B-Spline Wavelet Transform", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 23, No. 12, pp. 1443-1448, 2001.
5. Y.Y. Tang, L.H. Yang and J. Liu, "Characterization of Dirac-Structure Edges with Wavelet Transform", IEEE Transactions on Systems, Man, and Cybernetics, Part B, Vol. 30, No. 1, pp. 93-109, 2000.

**LEUNG, Clement Ho Cheung** 梁灝鏘

Professor

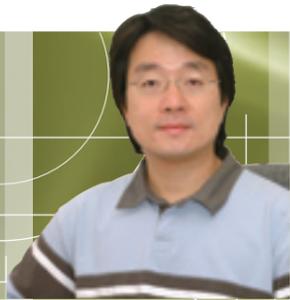
BSc McGill, MSc Oxford, PhD London

Prof. Leung obtained a BSc degree in Mathematics from McGill University, Canada, a MSc degree in Mathematics from the University of Oxford, United Kingdom, and a PhD degree in Computer Science from University College, London University, United Kingdom. Before joining Hong Kong Baptist University, he has held Established Chairs at the University of London, United Kingdom, and Victoria University, Australia. His research interests include Visual Information Search, Multimedia and Parallel Databases, and Intelligent Decision Support Systems.

His services to the research community include serving as Program Chair, Program Co-chair, Keynote Speaker, Panel Expert, and on the Program Committee and Steering Committee of major international conferences. In addition to contributing to the Editorship of a number of international journals, he has served as the Chairman of the International Association for Pattern Recognition Technical Committee on Multimedia and Visual Information Systems, as well as on the International Standards (ISO) MPEG-7 Committee. He is a Chartered Engineer, a Fellow of the Royal Society of Arts, Manufactures and Commerce, and a Fellow of the British Computer Society.

Selected Publications :

1. H. Zhang, C.H.C. Leung, and G.K. Raikundalia, "Topological Analysis of AOCD-Based Agent Networks and Experimental Results", Journal of Computer and System Sciences, Vol. 74, 2008.
2. H.L. Zhang, C.H.C. Leung and G.K. Raikundalia, "Matrix-Agent Framework: A Virtual Platform for Multi-Agents", Journal of Systems Science and System Engineering, Vol. 15, No. 4, pp. 436-456, December 2006.
3. Paul Over, C.H.C. Leung, Horace Ip and Michael Grubinger, "Multimedia Retrieval Benchmarks", IEEE Multimedia, Vol. 11, No. 2, pp. 80-84, 2004.
4. David Taniar and C.H.C. Leung, "The Impact of Load Balancing to Object-oriented Query Execution Scheduling in Parallel Machine Environment", Information Sciences, Vol. 157, pp. 33-71, 2003.
5. D. Taniar, Y. Jiang, K.H. Liu, and C.H.C. Leung, "Parallel Aggregate-Join Query Processing", Informatica, Vol. 26, pp. 321-332, 2002.



LEUNG, Yiu Wing 梁耀榮

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Prof. Leung received his BSc and PhD degrees from the Chinese University of Hong Kong. He is currently a Professor in the Department of Computer Science of Hong Kong Baptist University. He also serves as the Programme Director of MSc in IT Management Programme. His research interests include: (i) Networking and Multimedia, and (ii) Cybernetics and Systems Engineering.

Selected Publications :

1. Y.W. Leung, "Lightpath Concentrators for All-Optical Networks", *IEEE Journal of Lightwave Technology*, Vol. 24, No. 9, pp. 3259-3267, September 2006.
2. Y.W. Leung and R.Y.T. Hou, "Assignment of Movies to Heterogeneous Video Servers", *IEEE Transactions on Systems, Man and Cybernetics, Part A*, Vol. 35, No. 5, pp. 665-681, 2005.
3. Y.W. Leung and T.K.C. Chan, "Design of an Interactive Video-on-Demand System", *IEEE Transactions on Multimedia*, Vol. 5, No. 1, pp. 130-140, March 2003.
4. Y.W. Leung and Y.P. Wang, "An Orthogonal Genetic Algorithm with Quantization for Global Numerical Optimization", *IEEE Transactions on Evolutionary Computation*, Vol. 5, No. 1, pp. 41-53, February 2001.
5. Q. Zhang and Y.W. Leung, "An Orthogonal Genetic Algorithm for Multimedia Multicast Routing", *IEEE Transactions on Evolutionary Computation*, Vol. 3, No. 1, pp. 53-62, April 1999.



NG, Joseph Kee Yin 吳其彥

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BSc, MSc, PhD *Illinois*

Prof. Ng received a BSc in Mathematics and Computer Science, an MSc in Computer Science, and a PhD in Computer Science from the University of Illinois at Urbana-Champaign in 1986, 1988, and 1993, respectively. His current research interests include Real-Time Networks, Multimedia Communications, Ubiquitous/Pervasive Computing, and Distributed Computing. Prof. Ng has served as Program Chairs and General Chairs for numerous international conferences which include TENCON'06, RTCSA'05, ICPADS'05, and AINA'05. He also served as associate editors and editorial board members of some well recognized international journals.

Prof. Ng is also active in professional activities. He is the current Region 10 Coordinator for the Chapter Activities Board of the IEEE Computer Society, and is the Coordinator of the IEEE Computer Society Distinguished Visitors Programme (Asia/Pacific). Prof. Ng has been an Exco-member (93-95), General Secretary (95-97), Vice-chair (97-99), Chair (99-01) and now a past Chair for the IEEE, Hong Kong Section, Computer Chapter. Prof. Ng has received numerous Certificate of Appreciation from IEEE Computer Society, IEEE Region 10, and from IEEE Hong Kong Section. He also received the IEEE Meritorious Service Award from IEEE Computer Society in 2004. He is a senior member of the IEEE and has been a member of the IEEE Computer Society since 1991. Prof. Ng is also a member of the IEEE Communication Society, ACM, Hong Kong Computer Society, and the Founding Member for the Internet Society (ISOC)-Hong Kong Chapter.

Selected Publications :

1. Kenneth M. Chu, Joseph K. Ng, Karl R.P.H. Leung, and J.Y. Zhou, "A Train-Once Approach for Location Estimation using the Directional Propagation Model (DPM)", to appear in *IEEE Transactions on Vehicular Technology*.
2. Z.L. Wu, C.H. Li, Joseph K. Ng, and Karl R.P.H. Leung, "Location Estimation via Support Vector Kernel Regression", *IEEE Transactions on Mobile Computing*, Vol. 6, No. 3, pp. 311-321, March 2007.
3. J.Y. Zhou and Joseph K. Ng, "Using LDA Method to Provide Mobile Location Estimation Services within a Cellular Network", *Journal of Computers (JCP)*, Vol. 1, Issue 7, pp. 41-50, ISSN: 1796-203X, Academy Publisher, 2006.
4. Victor C. S. Lee, X. Wu, and Joseph K. Ng, "A Preemptive Scheduling Algorithm for Wireless Real-Time On-Demand Data Broadcast", *Real-Time System Journal*, Springer, Vol. 34, No. 2, pp. 83-99, October 2006.
5. S.B. Song, Joseph K. Ng, and B.H. Tang, "Some Results on the Self-similarity Property in Communication Networks", *IEEE Transactions on Communications*, Vol. 52, No. 10, pp. 1636-1642, October 2004.

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Prof. Yuen received his BSc degree in Electronic Engineering with first class honours in 1989 from City Polytechnic of Hong Kong, and his PhD degree in Electrical and Electronic Engineering in 1993 from the University of Hong Kong. He joined the Department of Computer Science, Hong Kong Baptist University in 1993 as an Assistant Professor and currently is a Professor. Prof. Yuen was a recipient of the University Fellowship to visit the University of Sydney in 1996. He was associated with the Laboratory of Imaging Science and Engineering, Department of Electrical Engineering. In 1998, Prof. Yuen spent a 6-month sabbatical leave in the University of Maryland Institute for Advanced Computer Studies (UMIACS), University of Maryland at College Park. He was associated with the Computer Vision Laboratory, CFAR. From June 2005 to January 2006, he was a Visiting Professor in GRAVIR laboratory (GRAphics, Vision and Robotics) of INRIA Rhone Alpes, France. He was associated with PRIMA Group. Prof. Yuen was the Director of Croucher Advanced Study Institute (ASI) on Biometric Authentication in 2004 and the Director of Croucher ASI on Biometric Security and Privacy in 2007. Prof. Yuen has been actively involved in many international conferences as an organizing committee and/or technical programme committee member such as FG and ICB. Recently, he was the track Co-chair of International Conference on Pattern Recognition 2006. Currently, Prof. Yuen is an Editorial Board member of Pattern Recognition.

Prof. Yuen's current research interests include Human Face Processing and Recognition, Biometric Security and Privacy, Context Modeling and Learning for Human Activity Recognition.

Selected Publications :

1. J. Huang, P.C. Yuen, W.S. Chen and J.H. Lai, "Choosing Parameters for Kernel Subspace LDA for Recognition of Face Images under Pose and Illumination Variations", *IEEE Transactions on System, Man and Cybernetics, Part B*, Vol. 37, No. 4, pp. 847-862, 2007.
2. P.C. Yuen and C.H. Man, "Human Face Image Searching System Using Sketch", *IEEE Transactions on System, Man and Cybernetics, Part A*, Vol. 37, No. 4, pp. 493-504, July 2007.
3. H.T. Zhao, P.C. Yuen and J. Kwok, "A Novel Incremental Principal Component Analysis and Its Application for Face Recognition", *IEEE Transactions on System, Man and Cybernetics, Part B*, Vol. 36, No. 4, pp. 873-886, 2006.
4. W.S. Chen, P.C. Yuen, J. Huang and D.Q. Dai, "Kernel Machine-based One-parameter Regularized Fisher Discriminant Method for Face Recognition", *IEEE Transactions on System, Man and Cybernetics, Part B*, Vol. 35, No. 4, pp. 659-669, 2005.
5. K.K. Lau, P.C. Yuen and Y.Y. Tang, "Directed Connection Measurement for Evaluating Reconstructed Stroke Sequence in Handwriting Images", *Pattern Recognition*, Vol. 38, No. 4, pp. 323-339, 2005.

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Selected Publications :

1. S.L. Chan and E.C. Wong, "Modeling the Cutting and Packing Problems with Graph Approach", in Proceedings of the 16th Triennial Conference of the International Federation of Operational Research Society, Edinburgh, U.K., July 2002.
2. S.L. Chan, "End-User Directed Requirement – A Case in Medication Ordering", Chapter V, *Advanced Topics in End User Computing*, edited by M. Mahmood, Idea Group Publishing, 2002.
3. S.L. Chan, "Scanning and Image Processing System (SIPS) for Medication Ordering", *Journal of End User Computing*, Vol. 13, No. 3 (2001). Also in A. Armoni (ed), "Effective Healthcare Information Systems", Chapter 18, IRM Press, 2002.
4. Y.M. Cheung and S.L. Chan, "A Systemic Approach to Define Agents", Proceedings of the Information Resources Management Association (IRMA) 2000 Conference, Anchorage, Alaska, May, 2000. Also in K. van Slooten (ed), "Optimal Information Modeling Techniques", Chapter 9, IRM Press, 2002.
5. S.L. Chan, "The Roles of The Web – A Framework for Understanding", Invited Presentation, The 6th Hong Kong Web Symposium, June 2000.

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Selected Publications :

1. X. Li, W.K. Cheung, J. Liu and Z.L. Wu, "A Novel Orthogonal NMF-Based Belief Compression for POMDPs", Proceedings of the 24th International Conference on Machine Learning(ICML'07), Corvallis, Oregon, USA, June 2007.
2. W.K. Cheung, X. Zhang, H. Wong, J. Liu, Z. Luo and F. Tong, "Service-Oriented Distributed Data Mining", IEEE Internet Computing, pp. 44-54, July/August 2006.
3. X. Zhang and W.K. Cheung, "Learning Global Models based on Local Data Abstractions", Proceedings of International Joint Conference on Artificial Intelligence, Edinburgh, Scotland, July 2005.
4. K.W. Cheung, K.C. Tsui and J. Liu, "Extended Latent Class Models for Product Recommendation", IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans, Vol. 34, No. 1, pp. 143-148, 2004.
5. K.W. Cheung and Lily F. Tian, "Learning User Similarity and Rating Style for Collaborative Recommendation", Information Retrieval, Vol. 7, pp. 395-410, 2004.

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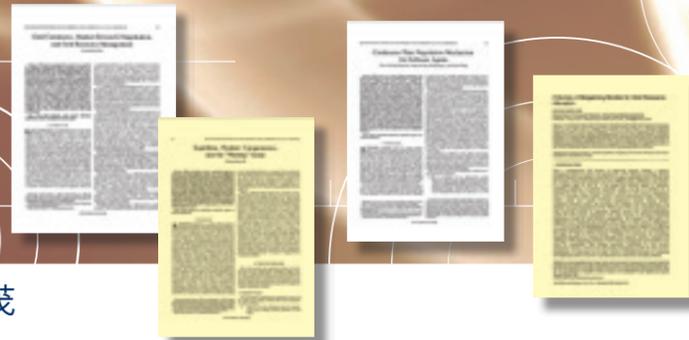
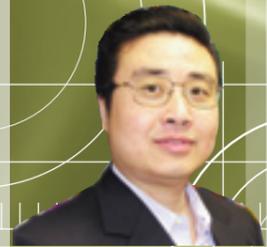
BSc, MPhil, PhD *CUHK*

Dr. Cheung received his PhD degree from the Department of Computer Science and Engineering at the Chinese University of Hong Kong in 2000. He joined the Department of Computer Science at Hong Kong Baptist University in 2001, and then became an Associate Professor in 2005.

His research interests include Machine Learning and Information Security, particularly the topics on Pattern Recognition, Independent Component Analysis, Neural Networks, Nonlinear Optimization, Watermarking, Financial Time Series Forecasting and Portfolio Management. He is the (founding) chairman of IEEE (Hong Kong) Computational Intelligence Chapter. He has taken the key positions (e.g., organizing committee chair, programme committee chair, session chair, financial chair etc.) in several major international conferences. Also, he is the Guest Co-Editor of the special issues of two peer-reviewed international journals.

Selected Publications :

1. Y.M. Cheung and H.T. Wu, "A Sequential Quantization Strategy for Data Embedding and Integrity Verification", IEEE Transactions on Circuits and Systems of Video Technology, Vol. 17, No. 8, pp. 1007-1016, 2007.
2. Z.Y. Zhang and Y.M. Cheung, "On Weight Design of Maximum Weighted Likelihood and an Extended EM Algorithm", IEEE Transactions on Knowledge and Data Engineering, Vol. 18, No. 10, pp. 1429-1434, 2006.
3. Y.M. Cheung, "Maximum Weighted Likelihood via Rival Penalized EM for Density Mixture Clustering with Automatic Model Selection", IEEE Transactions on Knowledge and Data Engineering, Vol. 17, No. 6, pp. 750-761, 2005.
4. Y.M. Cheung, "On Rival Penalization Controlled Competitive Learning for Clustering with Automatic Cluster Number Selection", IEEE Transactions on Knowledge and Data Engineering, Vol. 17, No. 11, pp. 1583-1588, 2005.
5. X.M. Zhao, Y.M. Cheung and D.S. Huang, "A Novel Approach to Extracting Features from Motif Content and Protein Composition for Protein Sequence Classification", Neural Networks, Vol. 18, No. 8, pp. 1019-1028, October 2005.

**SIM, Ben Kwang Mong** 沈觀茂

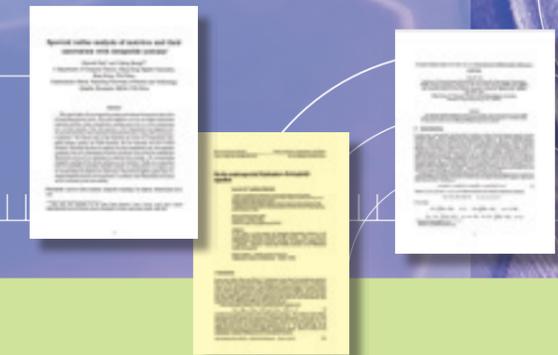
Associate Professor

BSc (Hons) *Ottawa*, MSc, PhD *Calgary*

Dr. Sim is an Associate Editor and a Guest Editor of many international journals. He is an Associate Editor of IEEE Transaction on Systems, Man, and Cybernetics, Part C since 2004 and an Editorial Board member of the International Journal of Hybrid Intelligent Systems (IOS Press) since 2005. As the sole Guest Editor, he single-handedly managed and coordinated the review processes for three special journal issues on (i) game-theoretic analysis and stochastic simulation of negotiation agents (IEEE Transaction on SMC), (ii) learning approaches for negotiation agents (International Journal of Intelligent Systems (Wiley)), and (iii) Agent-based Grid Computing, (Applied Intelligence Journal (Kluwer)). Prior to joining HKBU, he was an Associate Professor in the Department of Information Engineering, the Chinese University of Hong Kong, and a senior faculty at Academia Sinica (Taiwan's leading research institute). In addition to serving as area chair, session chair and programme committee member for many international conferences, and supervising over 20 researchers/students regionally, he is also a referee for many national research grant councils, including NSF in USA, RGC in HK, and ASTAR in Singapore.

Selected Publications :

1. K.M. Sim, "Grid Commerce, Market-Driven G-Negotiation, and Grid Resource Management", IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics, Vol. 36, No. 6, December 2006.
2. K.M. Sim and Y.S. Wang, "Evolutionary Asymmetric Games for Modeling Systems of Partially Cooperative Agents", IEEE Transactions on Evolutionary Computation, special issue on Evolutionary Computation and Games, Vol. 9, No. 6, December 2005.
3. K.M. Sim. "Equilibria, Prudent Compromises, and the "Waiting" Game", IEEE Transactions on Systems, Man and Cybernetics, Part B: Cybernetics, Vol. 35, No. 4, pp. 712-724, August 2005.
4. K.M. Sim and P.T. Wong, "Towards Agency and Ontology for Web-based Information Retrieval", IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews, Vol. 34, No. 3, pp. 1-13, 2004.
5. K.M. Sim and W.H. Sun. "Ant Colony Optimization for Routing & Load-Balancing: Survey and New Directions", IEEE Transactions on Systems, Man and Cybernetics, Part A, Vol. 33, No. 5, September 2003. Special Issue on Collective Intelligence, pp 560-572.

**TAM, Hon Wah** 譚漢華

Associate Professor

BSc *Georgia Inst. of Tech.*, MSc, PhD *Illinois*

Dr. Tam received his BSc (1981) in Applied Mathematics from the Georgia Institute of Technology, an MSc (1984) and a PhD (1989) in Computer Science from the University of Illinois at Urbana-Champaign. He is currently an Associate Professor at the Department of Computer Science, Hong Kong Baptist University. Prior to joining the Department, he worked at Wolfram Research Inc., where he participated in developing numerical computation and differential equation software for the widely used software package Mathematica. His research interests include Symbolic Computing, Ordinary Differential Equations, Solitons, and Networks.

Selected Publications :

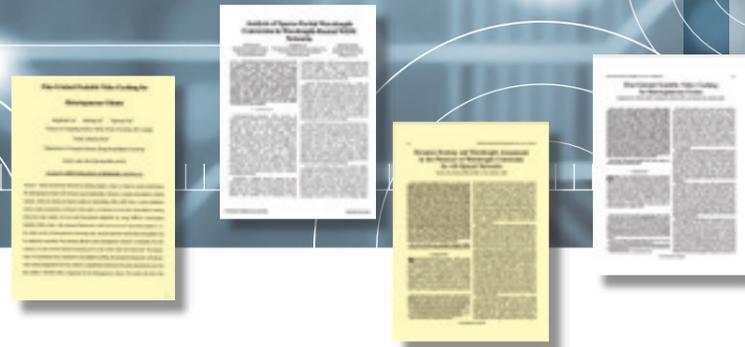
1. H.W. Tam and Z.N. Zhu, "(2+1)-Dimensional Integrable Lattice Hierarchies Related to Discrete Fourth-Order Non-Isospectral Problems", accepted to Journal of Physics A: Math Theo.
2. X.L. Luo, L.Z. Liao, and H.W. Tam, "Convergence Analysis of the Levenberg-Marquardt Method", Optimization Methods and Software, Vol. 22, No. 4, pp. 659-678, August 2007.
3. G..F. Yu and H.W. Tam, "Conservation Laws for Two (2+1)-Dimensional Differential-Difference Systems", Chaos, Solitons, and Fractals, Vol. 30, Issue 1, pp. 189-196, October 2006.
4. G..F. Yu and H.W. Tam, "Soliton Solution of Two (2+1)-Dimensional Differential-Difference Systems", Journal of the Physical Society of Japan, Vol. 74, No 7, pp. 1980-1982, July 2005.
5. H.W. Tam and Y.F. Zhang, "An Approach for Constructing Loop Algebra via Exterior Algebra and Its Applications", Chaos, Solitons, and Fractals, Vol. 23, Issue 2, pp. 535-541, January 2005.



CHU, Xiaowen 褚曉文

Assistant Professor

BEng, *Tsinghua*, PhD *HKUST*



Dr. Chu received his BEng degree in Computer Science from the Tsinghua University, China, in 1999, and a PhD degree in Computer Science from the Hong Kong University of Science and Technology in 2003. He is currently an Assistant Professor in the Department of Computer Science, Hong Kong Baptist University. His research interests include Wireless Mesh Networks, Optical WDM Networks, Internet Security, Peer-to-Peer Network, Multimedia Networking, and Web Server Performance.

Selected Publications :

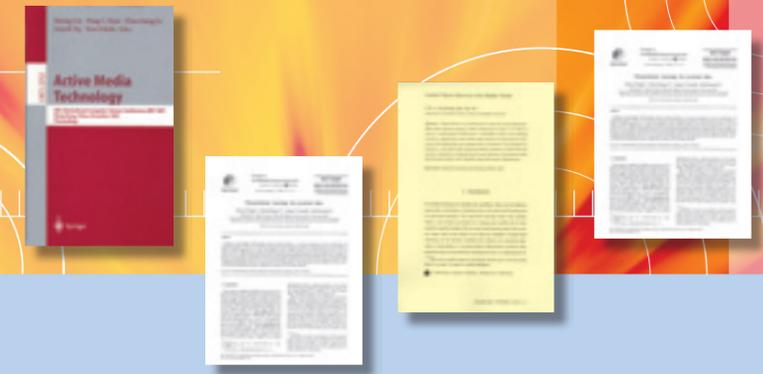
1. X.W. Chu, T. Bu, and X.Y. Li, "A Study of Lightpath Rerouting Schemes in Wavelength-Routed WDM Networks", in proceedings of IEEE ICC 2007.
2. J. Liu, J. Xu, and X.W. Chu, "Fine-Grained Scalable Video Caching for Heterogeneous Clients", IEEE Transactions on Multimedia, Vol. 8, No. 5, October 2006.
3. X.W. Chu and B. Li, "Dynamic Routing and Wavelength Assignment in the Presence of Wavelength Conversion for All-Optical Networks", IEEE/ACM Transactions on Networking, Vol. 13, No. 3, pp. 704-715, June 2005.
4. X.W. Chu, J. Liu, and Z. Zhang, "Analysis of Sparse-Partial Wavelength Conversion in Wavelength-Routed WDM Networks", in Proceedings of IEEE INFOCOM'04, Hong Kong, March 2004.
5. X.W. Chu, B. Li and I. Chlamtac, "Wavelength Converter Placement under Different RWA Algorithms in Wavelength-Routed All-Optical Networks", IEEE Transactions on Communications, Vol. 51, No. 4, pp. 607-617, April 2003.



LI, Chun Hung 勵俊雄

Assistant Professor

BSc *SUNY*, PhD *PolyU*



Dr. Li got his PhD from the Hong Kong Polytechnic University in the area of computer vision and image processing. Previously, he got his BSc degree from the State University of New York at Stony Brook. He is currently an Assistant Professor in the Department of Computer Science, Hong Kong Baptist University.

Dr. Li's current research interests include Machine Learning, Data Mining, Clustering and Computer Vision. He is currently conducting projects on applications of machine learning, which include: road traffic monitoring, online communities and web information systems.

Previous research projects of Dr. Li include pattern recognition systems for automatic wire-bonding machine, cancer prognosis and diagnosis, and tongue diagnosis.

Selected Publications :

1. Z.L. Wu, C.H. Li, Joseph K. Ng and Karl R.P.H. Leung, "Location Estimation via Support Vector Regression", IEEE Transactions on Mobile Computing, Vol. 6, No. 3, pp. 311-321, March 2007.
2. Z.L. Wu and C.H. Li, "Feature Selection with Transductive Support Vector Machine, Feature Extraction, Foundations and Applications", edited by I. Guyon, S. Gunn, M. Nikravesh, and L. Zadeh, pp. 463-480, Physica-Verlag, Springer, 2006.
3. M.H. Pi, C.H. Li and H. Li, "A Novel Fractal Image Watermarking", IEEE Transactions on Multimedia, Vol. 8, No. 3, pp. 488-495, June 2006.
4. C.H. Li, "Guided Cluster Discovery with Markov Model", Applied Intelligence, Vol. 22, pp. 37-46, 2005.
5. C.H. Li and P.C. Yuen, "Tongue Image Matching Using Color Content", Pattern Recognition, Vol. 35, No. 2, pp. 407-419, 2002.

**WONG, Kelvin Chi Kuen** 黃志權

Assistant Professor

MSc, Salford, PhD Nottingham

Dr. Wong is a trained software developer from the Hong Kong Polytechnic. He had worked for two and a half years at Chartered On-Line. During his tenure at the software bureau, he was involved in the development of a number of business software systems.

Dr. Wong joined the Computing Studies Unit of Hong Kong Baptist College (now the University) in 1984. Driven by his strong desire of equipping himself with more knowledge and skills to be a good teacher, he pursued postgraduate training at the University of Salford and University of Nottingham, where he was awarded an MSc degree in Computer Science and a PhD degree in IT in Education in 1987 and 1997, respectively. He is now an Assistant Professor in Computer Science. His current research interests include IT in Education, and Applications of Latent Semantic Analysis.

Selected Publications :

1. Kelvin C. Wong, Fion S.L. Lee, Cynthia F.K. Lee, William K. Cheung, Anders I. Mørch and J. Liu, "A Pilot Study on the Impact of the Web-based Essay Critiquing System on Writing at the Tertiary Level", Proceedings of the 2007 International Joint Conference on e-Commerce, e-Administration, e-Society, and e-Education, 2007.
2. William K. Cheung, Anders I. Mørch, Kelvin C. Wong, Cynthia Lee, J. Liu and Mason H. Lam, "Grounding Collaborative Learning in Semantics-Based Critiquing", a special issue of the International Journal of Distant Education Technologies, IDEA Group Publishing, Vol. 5, No.2, pp. 40-55, 2007.
3. Kelvin C. Wong, Anders I. Mørch, William K. Cheung, Mason H. Lam and Janti P. Tang, "A Critiquing System to Support English Composition through the Use of Latent Semantic Analysis", Proceedings of IEEE International Conference on e-Technology, e-Commerce and e-Service, 2005.
4. J. Liu, Kelvin C. Wong and K.K. Hui, "An Adaptive User Interface Based on Personalized Learning", IEEE Intelligent Systems, Vol. 18, No. 2, 2003.
5. Kelvin C. Wong, W. Wong, Winsome Mak, K.F. Leung and W.K. Chan, "A Multimedia Web-based Patient Education System", Proceedings of Hong Kong International Medical Informatics Conference, 2003.

**XU, Jianliang** 徐建良

Assistant Professor

BEng, Zhejiang, PhD HKUST

Dr. Xu received his BEng degree in Computer Science and Engineering from the Zhejiang University, Hangzhou, China, and his PhD degree in Computer Science from the Hong Kong University of Science and Technology. Dr. Xu is currently an Assistant Professor in the Department of Computer Science of Hong Kong Baptist University. He was a visiting scholar in the Department of Computer Science and Engineering of the Pennsylvania State University in summer 2005. He has been an executive committee member of the ACM Hong Kong Chapter since 2003.

Dr. Xu's current research interests lie in Data Management, Mobile/Pervasive Computing, Wireless Sensor Networks, and Distributed Systems. He has published more than 50 technical papers in these areas, most of which appeared in prestigious conferences and journals including ACM SIGMOD, ACM/USENIX MobiSys, IEEE ICDE, IEEE INFOCOM, IEEE Transactions on Knowledge and Data Engineering, IEEE Transaction on Parallel and Distributed Systems, ACM/IEEE Transactions on Networking, and VLDB Journal. He has been a co-editor of the book entitled Web Content Delivery (Springer), and a co-guest editor of the International Journal of Grid Computing: Theory, Methods and Applications (Elsevier) for a special issue on scalable information systems. Dr. Xu co-chaired the International Workshop on Peer-to-Peer Information Management (P2PIM) in 2006. He is currently serving as a seminar programme Co-chair for MDM '08 and a programme committee member for WWW '08, MDM '08, RFDM '08, and ACM SAC '08.

Selected Publications :

1. X. Tang and J. Xu, "Optimizing Lifetime for Continuous Data Aggregation with Precision Guarantees in Wireless Sensor Networks", IEEE/ACM Transactions on Networking (ToN), accepted to appear.
2. J. Xu, X. Tang, and W.C. Lee, "A New Storage Scheme for Approximate Location Queries in Object Tracking Sensor Networks", IEEE Transactions on Parallel and Distributed Systems (TPDS), accepted to appear.
3. M. Wu, J. Xu, X. Tang and W.C. Lee, "Top-k Monitoring in Wireless Sensor Networks", IEEE Transactions on Knowledge and Data Engineering (TKDE), Vol. 19, No. 6, pp. 962-976, June 2007.
4. J. Xu, W.C. Lee, X. Tang, Q. Gao and S. Li, "An Error-Resilient and Tunable Distributed Indexing Scheme for Wireless Data Broadcast", IEEE Transactions on Knowledge and Data Engineering (TKDE), Vol. 18, No. 3, pp. 392-404, March 2006.
5. J. Xu, X. Tang and W.C. Lee, "Time-Critical On-Demand Data Broadcast: Algorithms, Analysis, and Performance Evaluation", IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 17, No. 1, pp. 3-14, January 2006.



FENG, Jian 馮健

Lecturer

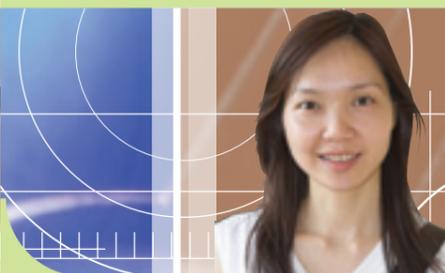
BEng, MSc, PhD *UNSW*



Dr. Feng received her PhD degree in Electrical Engineering from the University of New South Wales, Australia. Before joining the University, Dr. Feng was with the City University of Hong Kong. Her current research interests include Digital Video Processing, Multimedia Communications, Internet Applications, Digital Watermarking, Video Transmission and Storage System. Dr. Feng is active in research and has published over 70 technical papers in various refereed journals and conference proceedings.

Selected Publications :

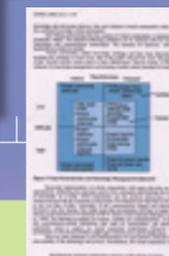
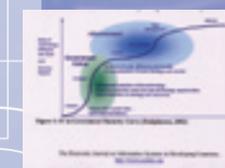
1. W.F. Poon, K.T. Lo and J. Feng, "Interactive Broadcasting System for VBR Encoded Video", *IEEE Transactions on Broadcasting*, Vol. 53, No. 2, pp. 459-467, June 2007.
2. J. Feng and K.T. Lo, "Motion Compensation for Video Compression", *Encyclopedia of Multimedia*, Springer, pp. 417-426, 2006. (ISBN: 0-387-24395-X)
3. J. Feng, W.F. Poon and K.T. Lo, "Large-Scale Video on Demand System", *Encyclopedia of Multimedia*, Springer, pp. 391-399, 2006. (ISBN: 0-387-24395-X)
4. K.M. Ho, K.T. Lo and J. Feng, "Multimedia Streaming on the Internet", *Encyclopedia of Multimedia*, Springer, pp. 595-603, 2006. (ISBN: 0-387-24395-X)
5. W.F. Poon, K.T. Lo and J. Feng, "Provision of Continuous VCR Functions in Interactive Broadcast VoD Systems", *IEEE Transactions on Broadcasting*, Vol.51, No.4, pp. 460-472, December 2005.



LEE, Fion Sau Ling 李秀玲

Lecturer

BAIS (Hons) *CityU*, MPhil *HKUST*, PhD *CityU*

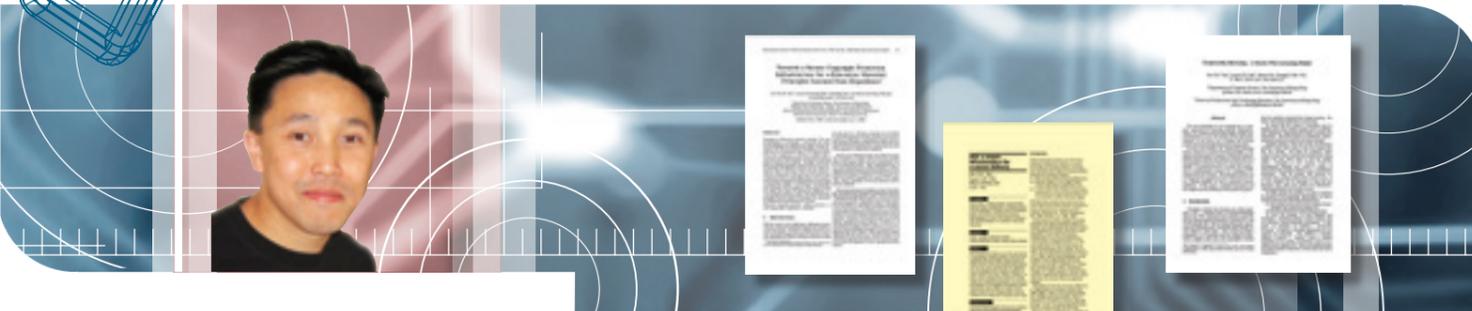


Dr. Lee received her MPhil degree in Industrial Engineering and Engineering Management from the Hong Kong University of Science and Technology, and the PhD degree in Information Systems at the City University of Hong Kong in 2005. Currently, she is a Lecturer in the Computer Science Department of Hong Kong Baptist University. Her research interests include Behavior in the Virtual Community, Community Informatics, Collaborative Learning, and Knowledge Management.

Selected Publications :

1. Fion S.L. Lee, "Enhancing Communication in Online Community", *Proceedings of the 2007 International Joint Conference on e-Commerce, e-Administration, e-Society, and e-Education*, Hong Kong, 2007.
2. Karen S.K. Cheung, Fion S.L. Lee, Rachael K.F. Ip, Christian Wagner, "The Development of Successful On-Line Communities", *International Journal of the Computer, the Internet and Management*, Vol. 13, No. 1, 2005.
3. Fion S.L. Lee, Douglas Vogel, Moez Limayem, "Virtual Community Informatics: A Review and Research Agenda", *Journal of Information Technology Theory and Application*, Vol. 5, No.1, pp. 47-61, 2003.
4. Christian Wagner, Karen Cheung, Fion S.L. Lee, Rachael Ip, "Enhancing E-Government in Developing Countries: Managing Knowledge through Virtual Communities", *Electronic Journal of Information Systems in Developing Countries*, Vol. 14, No. 4, pp. 1-20, 2003.
5. Fion S.L. Lee, Douglas Vogel, Moez Limayem, "Virtual Community Informatics: What We Know and What We Need to Know", *Proceedings of the 35th Hawaii International Conference on System Sciences (HICSS)*, Hawaii, 2002.





YAU, Joe Cho Ki 邱祖淇

Lecturer

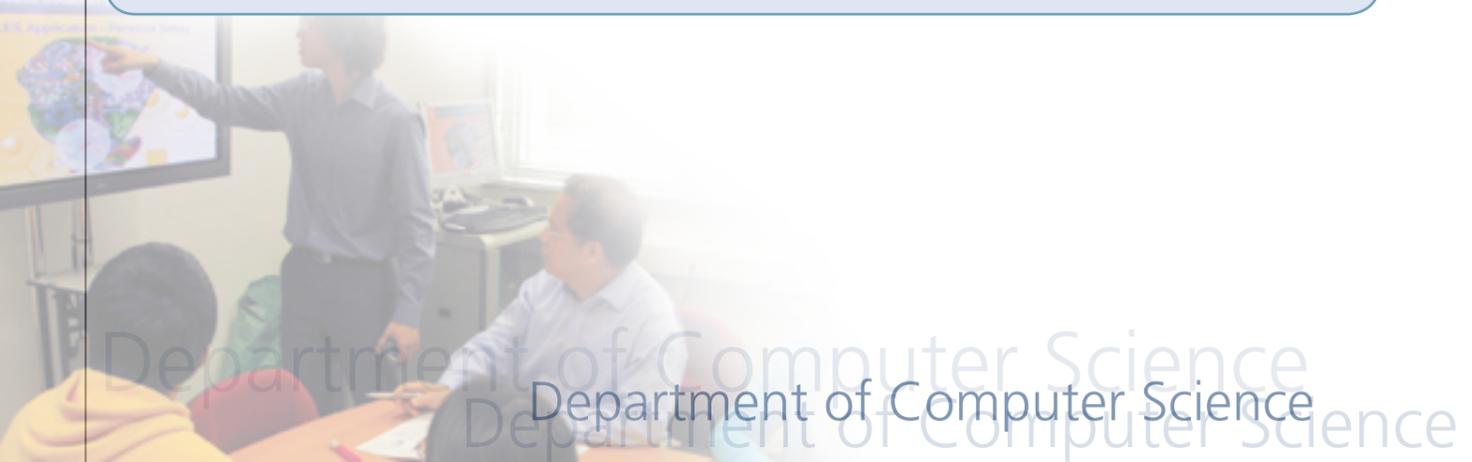
BMath *Waterloo*, MPhil, PhD *HKU*

Dr. Yau received his MPhil and PhD from the University of Hong Kong. Before joining the Department, he worked for HKU SPACE as a software engineer, and was also a part-time lecturer. Dr. Yau is interested in researching computer security. His research focus includes Copyright Protection Systems, Digital Rights Management, Software Protection, Information Hiding, e-Government, e-Voting, etc. He has published a number of journal papers and conference papers, mostly in the area of computer security and content protection.

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Selected Publications :

1. Joe C.K. Yau, Lucas C.K. Hui, S.M. Yiu and Bruce S.N. Cheung, "Towards a Secure Copyright Protection Infrastructure for e-Education Material: Principles Learned from Experience", *International Journal of Network Security*, Vol. 2, No. 1, pp. 21-28, January 2006.
2. Joe C.K. Yau, Lucas C.K. Hui, S.M. Yiu, Y. Woo, K.W. Lau, Bruce S.N. Cheung, "Trustworthy Browsing – A Secure Web Accessing Model", *The 2005 IEEE International Conference on e-Technology, e-Commerce and e-Service*, pp. 542-547, March 29-April 1, 2005.
3. Joe C.K. Yau, Lucas C.K. Hui, Bruce Cheung and S.M. Yiu, "eCX: a Secure Infrastructure for e-Course Delivery", *Internet Research: Electronic Networking Applications and Policy*, Vol. 13, No. 2, pp. 116-125, 2003.
4. Joe C.K. Yau, Lucas C.K. Hui, Bruce S.N. Cheung, S.M. Yiu, Joseph K.W. Lee, W. K. Yu and Eric H.M. Li, "A Digital Rights Management System for e-Content", *Journal of Systems and Software*.
5. Joe C.K. Yau, Lucas C.K. Hui, Bruce S.N. Cheung, S.M. Yiu and Joseph K.W. Lee, "PowerEdBuilder – A Universal Secure e-Learning Infrastructure", *Proceedings of SSGRR 2002 (Winter)*, January 21-27, 2002.



MILANI, Alfredo

Visiting Scholar

BSc, PhD *University of Pisa*

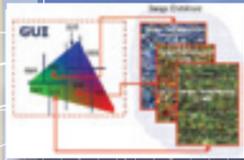
Dr. Alfredo Milani is an Associate Professor in Artificial Intelligence at the Department of Mathematics and Computer Science, University of Perugia, Italy. He is currently visiting the Department of Computer Science at Hong Kong Baptist University, on leave from the University of Perugia. Dr. Milani received his BSc degree from the University of Pisa, Italy, in 1984 and his PhD degree from the University of Pisa, Italy, in 1987. After obtaining his PhD, Dr. Milani has been Assistant Researcher at the Institute of Computational Linguistics, of the Italian National Research Council, CNR, Pisa, since 1988, and at University of Perugia, since 1990. In 2001 he was appointed Associate Professor at the Department of Computer Science, University of Turin, Italy. His research interests are in Automated Planning and Action Based Reasoning and in the broad area of Computational Intelligence, including Evolutionary and Adaptive Systems.

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Selected Publications :

1. A. Milani and V. Poggioni, "Planning in Reactive Environments", to appear in *Computation Intelligence, An International Journal*, Blackwell.
2. E. Falcinelli, S. Marcugini and A. Milani, "An Architecture for Dynamical News Providers", *IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IATW'06)*, IEEE Press, pp. 200-203, 2006.
3. A. Milani, M. Baiocchi, V. Poggioni and S. Suriani, "A Multivalued Logic Model of Planning", in *Frontiers in Artificial Intelligence and Applications*, Vol.141, pp. 575-584, IOS Press, 141, ISSN 0922-6389, 2006.
4. A. Milani, S. Marcugini and M. Baiocchi, "A Planning Model for Concurrent Asynchronous Automata", *International Journal of Information Theories and Applications*, Vol.9, No.2, pp. 61-80, 1310-0513, 6, 2002.
5. A. Milani, "Planning and Information Technology for the Web", *Planet Newsletter*, Vol.1, No.2, pp. 15-19, 2001.





QIU, Guoping 邱國平

Visiting Scholar

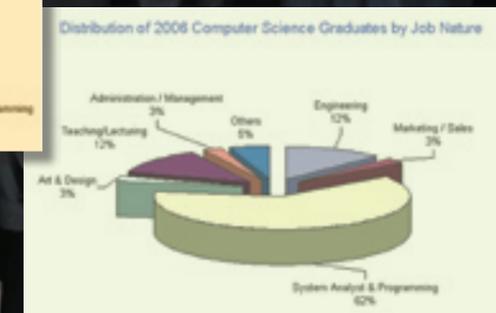
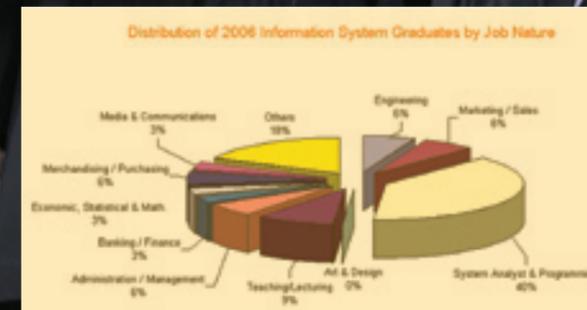
BSc *UESTC*, PhD *UCLAN*

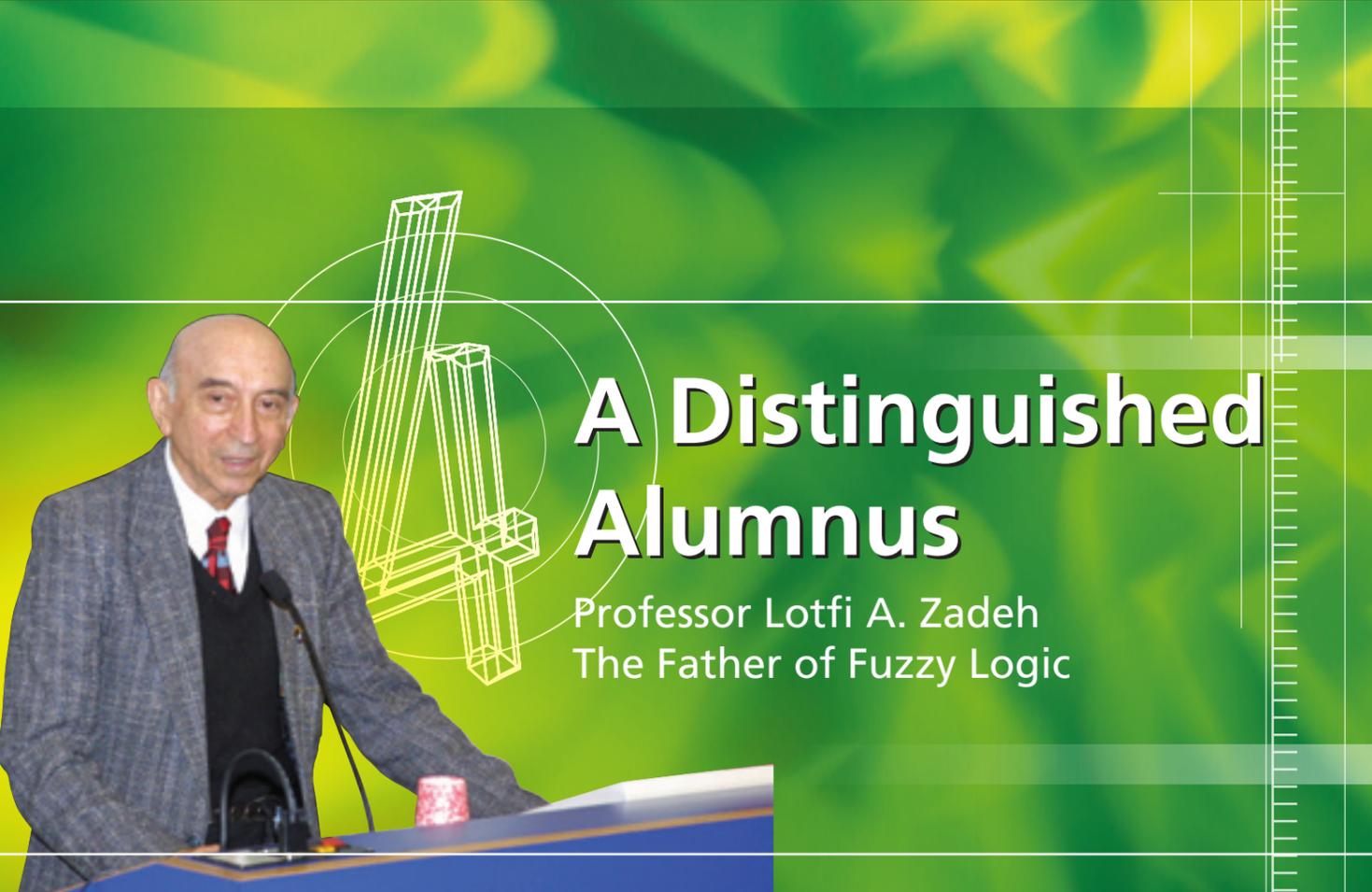
Dr. Qiu is a Reader in Visual Information Processing in the School of Computer Science, University of Nottingham, UK. He is currently visiting the Department of Computer Science at Hong Kong Baptist University, on leave from the University of Nottingham. Dr. Qiu received his BSc degree from the University of Electronic Science and Technology of China, Chengdu, China, in 1984 and his PhD degree from the University of Central Lancashire, Preston, England, in 1993. After obtaining his PhD, Dr. Qiu has worked as a Lecturer at the University of Derby, the University of Leeds and the University of Nottingham. His research interests are in the broad area of Visual Information Processing, including Content-based Image Indexing and Retrieval and Computational Photography.

Selected Publications :

1. G. Qiu, E. Reinhard and G.D. Finlayson, "Guest Editorial: Special Issue on High Dynamic Range Imaging", *The Journal of Visual Communication and Image Representation*, Vol. 18, Issue 5, pp. 357-358, October 2007.
2. J. Duan, G. Qiu, and G. D. Finlayson, "Learning to Display High Dynamic Range Images", *Pattern Recognition*, Vol. 40, Issue 10, pp. 2641-2655, October 2007.
3. G. Qiu, J. Morris and X. Fan, "Visual Guided Navigation for Image Retrieval", *Pattern Recognition*, Vol. 40, Issue 6, pp. 1711-1721, June 2007.
4. G. Qiu, X. Feng and J. Fang, "Compressing Histogram Representations for Automatic Colour Photo Categorization", *Pattern Recognition*, Vol. 37, pp. 2177-2193, 2004.
5. G. Qiu, "Colour Image Indexing Using BTC", *IEEE Transactions on Image Processing*, Vol. 12, No.1, pp. 93-101, 2003.

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A Distinguished Alumnus

Professor Lotfi A. Zadeh
The Father of Fuzzy Logic



We are honored to have Prof. Lotfi A. Zadeh, one of the most influential computer scientists of our time (also known as The Father of Fuzzy Logic), as the alumnus of our department, commencing November 2004.

Prof. Zadeh is a Professor in the Graduate School, Computer Science Division, Department of EECS, University of California, Berkeley. He is also the Director of Berkeley Initiative in Soft Computing (BISC). Prof. Zadeh is a Fellow of the IEEE, AAAS,

ACM, AAAI, and IFSA. In 1952, Prof. Zadeh, in cooperation with John R. Ragazzini, made important contributions to the development of the z-transform approach to the analysis of sampled-data systems. Before 1965, he was recognized both nationally and internationally as one of the leading contributors to the foundations of modern systems theory and its applications. In 1965, Prof. Zadeh published his famous article on "Fuzzy Sets", which initiated a new direction of research as well as new extensions to artificial intelligence, linguistics, logic, decision

analysis, control theory, and theory of computation. This seminal work brought a multiplicity of studies conducted in a great number of research centres and groups around the world. For his distinguished contributions to the fields and community, he has received numerous prestigious decorations and awards, including around 20 honorary doctorates from universities in Europe, USA, and Canada, the IEEE Education Medal, the IEEE Richard W. Hamming Medal, the IEEE Medal of Honor, the ACM 2000 Allen Newell Award, the AIM Information Science Award, the SOFT Scientific Contribution

Memorial Award of the Japan Society for Fuzzy Theory, and the Web Intelligence Consortium (WIC) Outstanding Contribution Award, to name a few.

On November 9, 2004, Prof. Zadeh received from Hong Kong Baptist University (HKBU) his first Honorary Doctorate degree in Asia. It was also for the first time that HKBU awarded an Honorary Doctorate degree to a computer scientist.



Research

Department of
 Computer
 Science

5.1 Three Strategic Research Areas

The Department has, over the years, established several areas of research excellence in Intelligent Informatics, including:

- Agents, Machine-learning, and Data-mining (AMD)
- Networking and Multimedia
- Pattern Recognition



Agents, Machine-learning, and Data-mining (AMD)

- Advanced Search Paradigms
- Autonomy Oriented Computing and Multi-agent Systems
- Constraint Programming, Optimization, and Scheduling
- Speech Analysis, Information Filtering and Web Mining
- Statistical and Graph-based Learning
- Web Intelligence



Through various research projects, we have successfully developed and applied related computational techniques to a wide variety of applications. Furthermore, our unique research strength in, as well as contribution to, Web Intelligence has

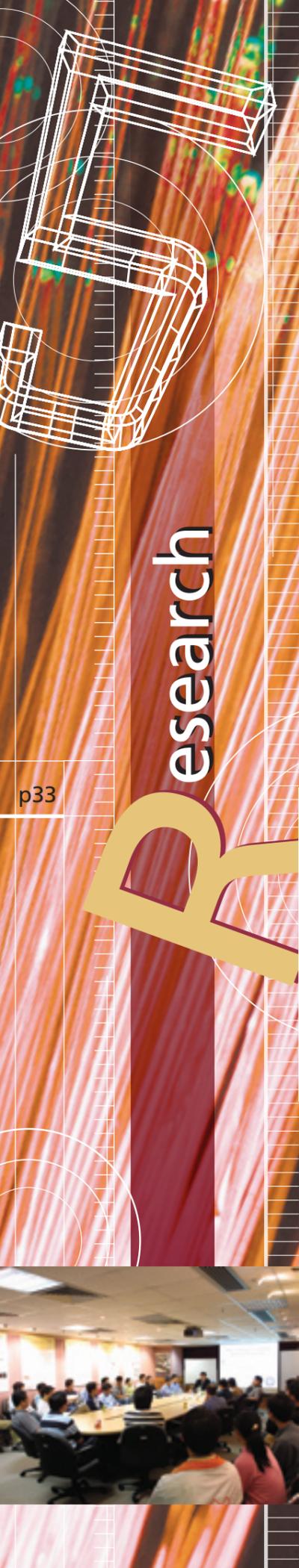
been identified by the Research Grants Council (RGC), which awarded a total of HK\$3.8 million to Prof. Jiming Liu as the Principal Investigator (PI) to lead a research centre for developing e-Transformation Technologies, with the Hong Kong University of Science and Technology and E-Business Technology Institute at the University of Hong Kong as the strategic partners. This competitive group research grant was one of five funded projects selected from 23 submissions by an international panel.



Recent Activities:

- 2006 IEEE International Conference on Data Mining (ICDM 2006), and IEEE / WIC / ACM International Conference on Web Intelligence (WI 2006) and Intelligent Agent Technology (IAT 2006)
The Conference was well attended with over 700 experts and scholars from 60 countries and regions.
- IEEE International Conference on e-Technology, e-Commerce and e-Service (EEE'05)
- 2004 IEEE/WIC/ACM International Conference on Web Intelligence (WI 2004) and Intelligent Agent Technology (IAT 2004)
- Roundtable on New Frontiers in Informatics

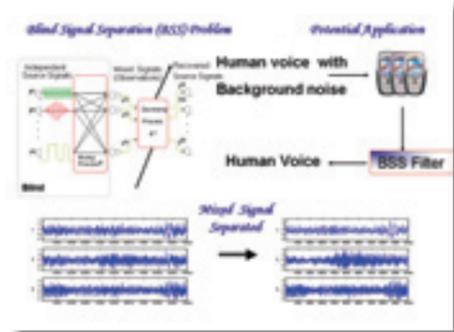




- 4th International Conference on Intelligent Data Engineering and Automated Learning (IDEAL 2003)

Funded Research and Consultancy Projects in the Past Five Years

1. Graph Approach to the Solution for Bin Packing Problems [HKBU Faculty Research Grant, PI: Dr. CHAN, Stephen Lai Chung]
2. Annual Maintenance for Examination Management System [Science Consultancy Project, PI: Dr. CHAN, Stephen Lai Chung]
3. Web Teaching Evaluation System [Science Consultancy Project, PI: Dr. CHAN, Stephen Lai Chung]
4. A Model-based Approach to Distributed Data Mining with Privacy Preservation (HKSAR RGC Earmarked Grant, PI: Dr. CHEUNG, William Kwok Wai)
5. Value Directed Compression for POMDP Planning with Belief State Analysis (HKBU Faculty Research Grant, PI: Dr. CHEUNG, William Kwok Wai)
6. Learning Global Models from Local Data with Privacy Preservation (HKBU Faculty Research Grant, PI: Dr. CHEUNG, William Kwok Wai)
7. A Statistical Approach to Integration of Content-Based and Collaborative Filtering for Product Recommendation in Electronic Commerce (JRS UK / Hong Kong Joint Research Scheme from British Council, PI: Dr. CHEUNG, William Kwok Wai)
8. A Mixture of Bipartite Graphs for Website Structure Analysis (HKBU Faculty Research Grant, PI: Dr. CHEUNG, William Kwok Wai)
9. Learning Hidden Markov Model with Application to Information Extraction [HKBU Faculty Research Grant, PI: Dr. CHEUNG, William Kwok Wai]
10. A Study of RBF Network for Classifying Chinese Herbal Fingerprints (HKSAR RGC Earmarked Grant, PI: Dr. CHEUNG, Yiu Ming)
11. On Fragile Watermarking and Robust Hashing for 3D Mesh Authentication (HKBU Faculty Research Grant, PI: Dr. CHEUNG, Yiu Ming)
12. An Efficient Approach to Shelf Space Allocation (HKBU Faculty Research Grant, PI: Dr. CHEUNG, Yiu Ming)
13. On Developing an Infrared-Spectrum Fingerprint Classifier for Fast Non-destructive Identification of Chinese Herbal Qualities [HKSAR RGC Earmarked Grant, PI: Dr. CHEUNG, Yiu Ming]
14. A New Divide-and-Conquer Based Radial Basis Function Network and Its Applications [HKBU Faculty Research Grant, PI: Dr. CHEUNG, Yiu Ming]
15. The Development and Analysis of an Independent Component Analysis Approach for Temporal Data Classification and Dimension Reduction with Application to Radial Basis Function Networks [HKBU Faculty Research Grant, PI: Dr. CHEUNG, Yiu Ming]
16. Technology Adoption for Enhancing Trust and Communication in Online Community (HKBU Faculty Research Grant, PI: Dr. LEE, Fion Sau Ling)
17. Regularization Approach to Classifier and Regressor Combination (HKBU Faculty Research Grant, PI: Dr. LI, Chun Hung)
18. On Feature Selection of High Dimensional Data (HKBU Faculty Research Grant, PI: Dr. LI, Chun Hung)
19. Energy Minimization Method for Semi-supervised Learning (HKBU Faculty Research Grant, PI: Dr. LI, Chun Hung)
20. Autonomy Oriented Computing (AOC) Systems for Large-Scale, Distributed



- Computational Problem Solving (HKBU Faculty Research Grant, PI: Prof. LIU, Jiming)
- 21. Web Intelligence for E-Transformation-A Research Centre [Group Research Project Funded by Hong Kong RGC Central Allocation, PI: Prof. LIU, Jiming]
- 22. Autonomy-Oriented Self-Organizing Approaches to Amorphous Computing with Applications in Nanotechnologies [HKSAR RGC Earmarked Grant, PI: Prof. LIU, Jiming]
- 23. Adaptive Self-Organization and Its Application in Mobile (Collective) Robotics [HKSAR RGC Earmarked Grant, PI: Prof. LIU, Jiming]
- 24. Grid Commerce, Market-driven G-Negotiation, and Grid Resource Allocation (HKBU Faculty Research Grant, PI: Dr. SIM, Ben Kwang Mong)
- 25. A Colored-Petri Net Approach for Modeling Bilateral and Multilateral Negotiations (HKBU Faculty Research Grant, PI: Dr. SIM, Ben Kwang Mong)
- 26. A Markov Chain Decision Making Strategy for Dynamic Negotiation with Outside Options (HKBU Faculty Research Grant, PI: Dr. SIM, Ben Kwang Mong)
- 27. Optimal Bargaining Strategy and Relaxed-criteria Protocol for Grid Resource Allocation (HKSAR RGC Earmarked Grant, PI: Dr. SIM, Ben Kwang Mong)

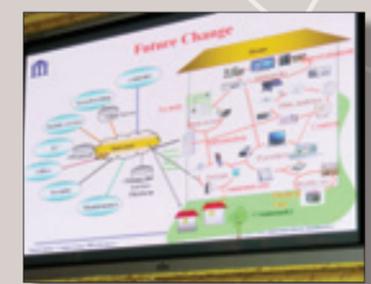
• Wireless Communications



In multimedia computing, we have developed a prototype video-on-demand system called Q-MPEG.V.2. It is characterized by its multi-server design, transmission and feedback control and QoS support. Recently, the group also conducted a project on wireless/mobile computing. In collaboration with HKCSL and People (two local telecommunication companies in Hong Kong), we have built a system to provide location services to mobile phone users. Using the GSM network alone, we can estimate the location of a mobile phone with an accuracy of 60 metres, about three times more accurate than any commercial system currently available. With the help of the GPS, this technology should facilitate fleet management and goods transport for logistics centres.

Networking and Multimedia

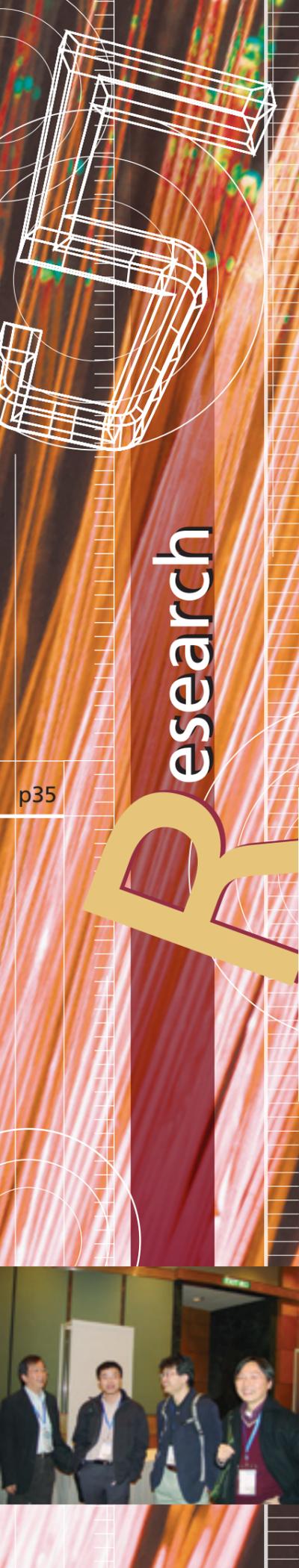
- All-Optical Networks
- IP Networks
- Mobile Computing
- Multimedia Communications and Systems
- Visual Information Systems



Recent Activity:

- 11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2005)





Funded Research and Consultancy Projects in the Past Five Years

1. A Microeconomic Approach for Digital Rights Management in P2P Networks (HKSAR RGC Earmarked Grant, PI: Dr. CHU, Xiaowen)
2. Performance Evaluation of IEEE 802.11 Based Wireless LAN with Internal UDP Traffic (HKBU Faculty Research Grant, PI: Dr. CHU, Xiaowen)
3. Lightpath Rerouting in Wavelength-Routed WDM Networks (HKSAR RGC Earmarked Grant, PI: Dr. CHU, Xiaowen)
4. Using Fuzzy Control Approach to Provide QoS Guarantees in Web Servers (HKBU Faculty Research Grant, PI: Dr. CHU, Xiaowen)
5. Efficient Resource Management in Reliable Wavelength-Routed WDM Networks [HKSAR RGC Earmarked Grant, PI: Dr. CHU, Xiaowen]
6. An IPV6 Tested for the Next Generation Internet [HKBU Faculty Research Grant, PI: Dr. CHU, Xiaowen]
7. Design of Distributed Broadcasting Protocols for Video Streaming (HKBU Faculty Research Grant, PI: Dr. FENG, Jian)
8. Error Resilient Video Transmission in Wireless Networks (HKBU Faculty Research Grant, PI: Dr. FENG, Jian)
9. Associative Indexing for Semantic Visual Information Discovery (HKBU Faculty Research Grant, PI: Prof. LEUNG, Clement Ho Cheung)
10. Lightweight Piggybacking for Packet Loss Recovery in Internet Telephony (HKBU Faculty Research Grant, PI: Prof. LEUNG, Yiu Wing)
11. A Research Centre for Ubiquitous Computing [Group Research Project Funded by RGC Central Allocation, PI: Prof. NG, Joseph Kee Yin]
12. Utilizing Different Positioning Technologies to Improve Location Estimation Accuracy for Location-aware Computing (HKBU Faculty Research Grant, PI: Prof. NG, Joseph Kee Yin)
13. Algorithms to Support Temporal Consistency of Sensor Data for Transaction Processing Applications in Broadcast Environments [HKSAR RGC Earmarked Grant, PI: Prof. NG, Joseph Kee Yin]
14. A Fault Tolerant and Jitter Free Fieldbus with GPS Based Time Synchronisation Allowing for Wireless Mobile Operation [GER Germany/Hong Kong Joint Research Scheme from RGC in 2001, PI: Prof. NG, Joseph Kee Yin]
15. Develop An Accurate Low-cost Mobile Location Estimation System (MLES) for Fleet Management Applications Using Existing Mobile Phone [Innovation and Technology Fund, PI: Prof. NG, Joseph Kee Yin]
16. Data-Centric Filter Management and Routing Optimization for Distributed Monitoring Systems (HKSAR RGC Earmarked Grant, PI: Dr. XU, Jianliang)
17. iPDA: Privacy-Preserving Location-based Data Access in Mobile Environments (HKSAR RGC Earmarked Grant, PI: Dr. XU, Jianliang)
18. Adaptive Data Collection for Real-Time Monitoring in Wireless Sensor Networks (HKBU Faculty Research Grant, PI: Dr. XU, Jianliang)
19. Time-critical Information Dissemination in a Wireless Computing Environment (HKBU Faculty Research Grant, PI: Dr. XU, Jianliang)
20. Data Dissemination Algorithms in a Wired/Wireless Integrated Environment (HKBU Faculty Research Grant, PI: Dr. XU, Jianliang)
21. ECOQUAD: Energy-Conserving Quality-Aware Data Collection in Wireless Sensor Networks [HKSAR RGC Earmarked Grant, PI: Dr. XU, Jianliang]
22. Improving Content Distribution with QoS Guarantees [HKBU Faculty Research Grant, PI: Dr. XU, Jianliang]
23. Processing and Scheduling Location-Dependent Queries [HKBU Faculty Research Grant, PI: Dr. XU, Jianliang]



Pattern Recognition

- Image Processing
- Vision-based Human Understanding Technology
- Wavelet Analysis and Its Applications

Characterized by its expertise in *Wavelet Analysis for Image Understanding*, the focus here ranges from multi-resolution theory and modern wavelet analysis, to their applications in pattern recognition, image processing, document analysis and understanding. The lab also develops on vision-based human understanding technology. This project concentrates on such applications as human face recognition, facial landmark detection and facial feature detection, enabling technologies that are increasingly important in supporting human machine communication.

Recent Activities:

- 18th International Conference on Pattern Recognition 2006 (ICPR 06)
The ICPR 06 has received a record-breaking 2,200 paper submissions, with more than 1,000 papers selected for oral and poster presentations. It attracted over 1,100 participants from 55 countries.
- Croucher Advanced Study Institute on Biometric Data Security and Privacy



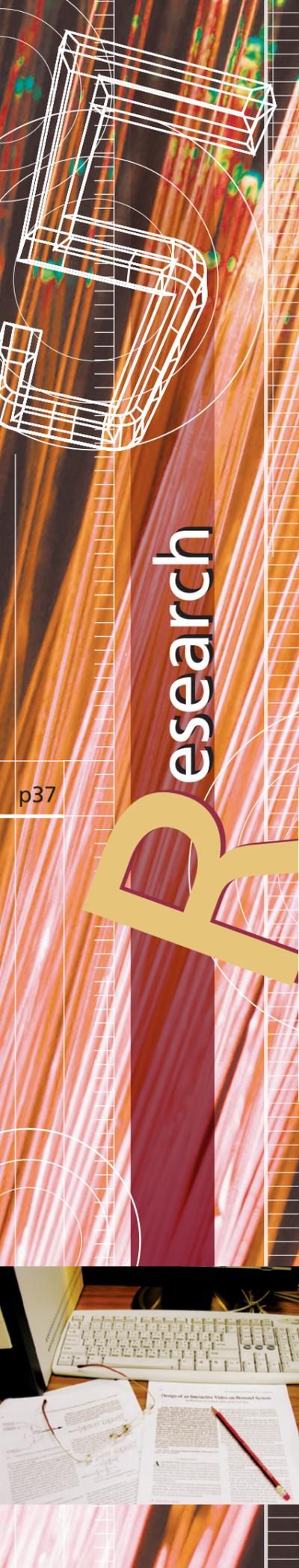
- Croucher Advanced Study Institute on Recent Development on Biometric Authentication



Funded Research Projects in the Past Five Years

1. Pfaffian Techniques, Backlund Transformation Methods and Their Application to Integrable Systems (HKSAR RGC Earmarked Grant, PI: Dr. TAM, Hon Wah)
2. Integrable Discretizations, Decompositions and New Explicit Solutions of Soliton Equations – a Bilinear Approach (HKSAR RGC Earmarked Grant, PI: Dr. TAM, Hon Wah)
3. Error Analysis in the Application of the ODE Approach to Unconstrained Optimization Problems (HKBU Faculty Research Grant, PI: Dr. TAM, Hon Wah)
4. A Bilinear Study of Q-difference Type, Nonisospectral Type and Multi-component Fully-discrete Type of Solution Equations (HKSAR RGC Earmarked Grant, PI: Dr. TAM, Hon Wah)

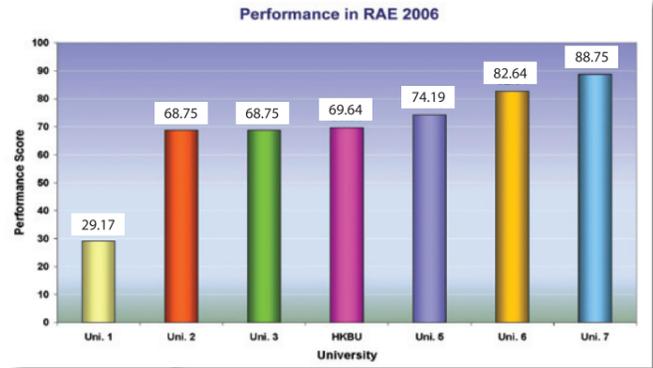




5. Feature Extraction in Handwriting-Based Personal Identification by Wavelet-Like Transform (HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan)
6. Off-line English and Chinese Writer Identification (HKSAR RGC Earmarked Grant, PI: Prof. TANG, Yuan Yan)
7. RetinaMiner: Discovering Changes of Vascular Structure in Retina Fundus Images (HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan)
8. Automatic Biometric Personal Identification with Ridgelet Transform (HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan)
9. Wavelet-Based Approach to Shape Skeletonization [HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan]
10. Construction of Wavelet Function for Extraction of Singularities of Ribbon-like Images [HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan]
11. Wavelet-Based Method for Mixture-State Document Segmentation [HKBU Faculty Research Grant, PI: Prof. TANG, Yuan Yan]
12. A Study of Kernel Function and its Parameters for Kernel Discriminant Analysis on Face Recognition (HKSAR RGC Earmarked Grant, PI: Prof. YUEN, Pong Chi)
13. A Study of Information Theoretic Filtering for Feature Detection in Video (HKBU Faculty Research Grant, PI: Prof. YUEN, Pong Chi and Dr. QIU, Guoping)
14. A Study of Kernel Function for Kernel Discriminant Analysis on Face Recognition (HKBU Faculty Research Grant, PI: Prof. YUEN, Pong Chi)
15. Research Issues on Kernel Fisher Discriminant for Face Recognition (HKBU Faculty Research Grant, PI: Prof. YUEN, Pong Chi)
16. Incremental Appearance-based Face Recognition Algorithm (HKBU Faculty Research Grant, PI: Prof. YUEN, Pong Chi)
17. Regularized Linear Discriminant Analysis for Face Recognition [HKSAR RGC Earmarked Grant, PI: Prof. YUEN, Pong Chi]
18. Human Face Image Analysis Algorithms for MPEG-4 Face Animation-Phase I [HKBU Faculty Research Grant, PI: Prof. YUEN, Pong Chi]

5.2 Research Assessment Exercise (RAE) 2006

The Department has achieved very good research performance in the past several years, as confirmed in the Research Assessment Exercise 2006 conducted by the UGC. Our research performance scores among local universities in the 2006 exercise and in the past exercises are shown as follows:



5.3 Research Outputs

Number of Refereed International Journal Papers

Year	No. of Papers	Average No. of Papers per Faculty
2006-2007	48	2.82
2005-2006	38	2.71
2004-2005	42	3.50
2003-2004	32	2.29



5.4 Monographs, Books, and Proceedings Written or Edited (2003-06)

Monographs	5
Edited Books & Proceedings	12
Total	17



5.5 Centre for e-Transformation Research (CTR)

The Centre for e-Transformation Research (CTR), established in 2003, is one of the affiliated research centres of the worldwide Web Intelligence Consortium (WIC). Its mission is to promote scientific research and industrial development in Web Intelligence (WI) which encompasses the exploration of the new fundamentals of Artificial Intelligence (AI) and their practical impacts on the next generation of Web-empowered products, systems, services, and activities, with the application to enabling the e-transformation processes in different sectors of the society, including e-business, e-learning, among others. WI, since first coined in 2000 by Prof. Jiming Liu together with Profs. Ning Zhong, Yiyu Yao, and Setsuo Ohsuga, is now a very active IT research area and has been well recognized by professional societies (e.g., IEEE and ACM).

CTR's research arm is rooted at Computer Science Department of HKBU, with expertise on autonomous agents and multi-agent systems, machine learning, and data mining, as well as advanced information technologies, e.g., wireless networks, grid computing, ubiquitous agents, etc. CTR's unique research strength has been recognized by the Research Grants Council (RGC) and supported through an RGC Central Allocation grant of HK\$3.8 million in the 2003-2004 exercise.

CTR's current research focus includes:

- Agents and Autonomy Oriented Computing
- Data Mining and Machine Learning





Research

- Grid and Service Oriented Computing and their applications to e-Business and e-Learning related projects, for example,
- Community Discovery and Formation in the Networked Society
- e-Learning Methodologies for English Language Enhancement
- e-Supply Chain and e-Logistic Management
- Services Management for Computation, Data Analysis, and Knowledge Inference

CTR's strategic research partners include the Hong Kong University of Science and Technology (HKUST), E-Business Technology Institute, the University of Hong Kong (ETI-HKU), as well as other world-wide WIC research centres. CTR is actively looking for more strategic partners so as to further strengthen the existing critical mass for making high impact to WI research and development. Other than research projects, CTR organizes regular research seminars, international conferences/workshops, and short-term exchange visits.

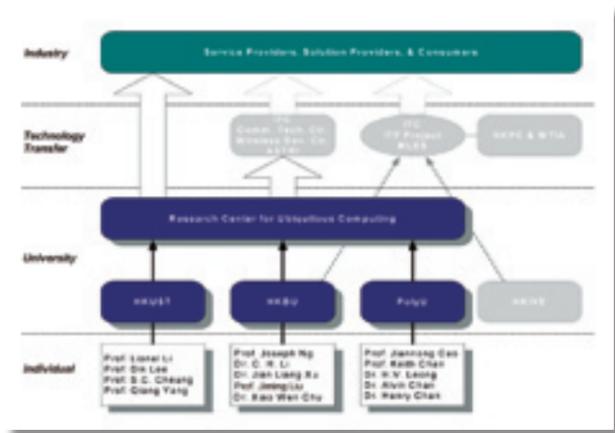


For more information about CTR, please visit <http://www.comp.hkbu.edu.hk/~ctr> or contact CTR Director Prof. Jiming Liu at jiming@comp.hkbu.edu.hk.

5.6 Research Centre for Ubiquitous Computing

The research team with Prof. Joseph K. Y. Ng as Director and members from this University, the Hong Kong University of Science and Technology, and Hong Kong Polytechnic University has received a research grant of \$3.6 million from the Research Grants Council (RGC Central Allocation Scheme 2005-2006) to set up a research centre for Ubiquitous Computing in Hong Kong.

“Ubiquitous Computing” means the processing of any data at anytime and anywhere through any networks using any devices. In order to realize ubiquitous computing, the research centre focuses on research areas such as location-aware computing, mobile data management, RFID/sensor networks, middleware, and embedded systems software development. The research centre aims not only at excelling in the research field, but also turning its research results into products and services which will benefit the industry and the society at large. For more information about the Research Centre for Ubiquitous Computing, please contact Prof. Joseph Ng at jng@comp.hkbu.edu.hk.



Undergraduate Programmes

The Department has an overpowering commitment to quality education. In the past years, we have educated over 1,000 computer professionals. Many graduates are now playing important roles in the IT industry. The Department currently offers two undergraduate programmes:

- BSc (Hons) in Computing Studies (Information Systems), which emphasizes business applications of information technologies; and
- BSc (Hons) in Computer Science, which emphasizes fundamentals and development of information technologies

Both of which are based on international curriculum recommendations (recommended by the IEEE Computer Society and the Association for Computing Machinery). Our programmes emphasize both the theoretical and practical aspects of computing. They include courses on latest technologies such as computer graphics and animation, computer security, e-commerce, intelligent systems, Internet, machine learning, multimedia, Web application development, and so forth. Students can choose to take these courses according to their interests.

Effective 2007-08, the Department has introduced an Entrance Scholarship Scheme for awarding scholarships to the first year students who have excellent performance in their HKALE, HKCEE and interview, and who have selected the programmes of the Department in Band A.

6.1 BSc (Hons) in Computing Studies (Information Systems)

This programme aims to produce graduates capable of becoming information systems specialists, which request students to have sufficient practical preparation built on an appropriate theoretical foundation. Hence, balancing of theory and practice becomes a critical element in the course design. The curriculum is for the first two years to lay a solid foundation with some development and tools learning experiences for further advanced work in the third year and to complete the honours degree with an honours project. In particular, the specific learning experiences designed for students in this programme include:

- A solid curriculum adopted from the one recommended by international information systems professional bodies;
- Substantial systems development opportunities (group and individual) under professors' close supervision;
- A specially designed summer internship programme for real life professional experience that may assist their future career development;
- Guided research opportunities via an undergraduate elite programme; and
- Optional one year of leave of absence to work in the IT/IS field for extended work experience at the end of Year II of study.



At the end of the programme, students will be equipped with KAIS:

- Knowledge and skills essential to an information systems specialist including information technology, IT-enabled business development, and business fundamentals;



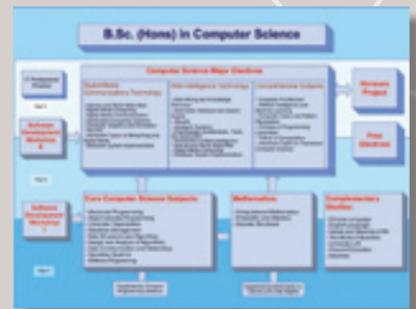
- Analytical and critical thinking capabilities;
- Interpersonal, communication, and team skills; and
- Self-awareness and a whole-person concept.

Graduates (i) will be able to apply their specialized knowledge and skills to solve problems, particularly in relation to liaising with end-users, decision-makers at various levels, and their technical peers in building computer based information systems; and (ii) will have established a sound foundation for further advanced study, if they so wish. Students may also choose to follow a route of technical specialists in Computer Science if they so desire. Possible IT/IS positions for graduates include:

- Information systems development - application programmer, system analyst and business analyst, system coordinator in business, industry and public organization;
- Information systems administration - systems administrator, database administrator, systems operator; and
- Other IT related sales and management job opportunities.

6.2 BSc (Hons) in Computer Science

The general aim of the BSc (Hons) in Computer Science programme is to prepare students for careers in computer science and information technology related areas. Students will be equipped to work in the industry or pursue postgraduate studies in Hong Kong or abroad. Graduates from this programme will have learnt



how to learn, and have the skills and confidence to meet the challenges in the rapidly changing information technology world. In addition to the university-wide whole person education, the specific objectives of the programme are to equip students with:

- Solid and broad foundation in computer science;
- In-depth knowledge in selected computer technology areas;
- Good problem solving skills; and
- Good communication and interpersonal skills.

After studying in this programme, students will be able:

- To become a computer science specialist in one of the two selected areas, namely digital media communication technology and Web intelligence technology;
- To successfully pursue their postgraduate research studies in related fields;
- To improve their problem solving skills, communication and interpersonal skills through working on independent honours project and group projects.
- To develop real-life information technology applications from the hands-on project experience gained in the software development workshops;
- To gain working experience in the information technology field by joining the optional one-year placement scheme.

For more information on the undergraduate programmes, please visit the departmental website at <http://www.comp.hkbu.edu.hk/>





Postgraduate Programmes

7.1 Research Postgraduate Programmes

The Department offers MPhil and PhD programmes, both of which are research-oriented.

Two types of studentships, viz. University Grant Studentships and Research Grant Studentships, are granted to eligible full-time research postgraduate students to provide them with financial assistance for their academic studies and daily life.

Full-time research postgraduate students are also eligible to apply for overseas attachment. Furthermore, in order to best train the postgraduate students and to enable them to pursue cutting-edge research, the Department strongly encourages and supports students' overseas research exchange experience during their studies by providing additional financial support, on top of the University research student expenses subsidy.

For more details, please refer to the departmental website: <http://www.comp.hkbu.edu.hk> .

7.2 Master of Science (MSc) in Information Technology Management

This programme aims to educate IT managers and professionals who possess technical and management knowledge for designing, developing and managing IT systems. It provides a transformational experience in integrating the technological and managerial sides of IT.

On completion of this programme, students will acquire:

- The current knowledge in three main areas of IT management (namely, IT enterprise management, knowledge and information management, and Internet

- and Web technologies);
- The technical and management knowledge in an integrated manner for designing, developing and managing IT systems;



- The sense and creativity of identifying business needs and the capability of transforming them into IT systems;
- The learning capability and solid foundation for sustainable self-development in the rapidly changing IT field.

Students can select full-time or part-time study mode. Normally, full-time study mode lasts for one year while part-time study mode lasts for two years. Classes are usually scheduled on weekday evenings or Saturdays.

Scholarships will be provided to students with excellent academic performance.





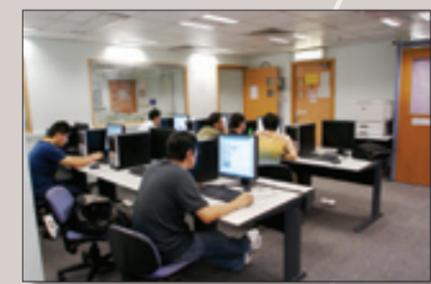
Laboratories and Facilities

Research and Development Laboratories:

- Agents, Machine-learning, and Data-mining (AMD) Laboratory
- Information Systems Laboratory
- Innovation and Technology Laboratory
- Networking and Multimedia Laboratory
- Pattern Recognition Laboratory

Creative IT Laboratories:

- Digital Media Laboratory
- Project Development Laboratory for Undergraduate Programmes I, II
- Project Development Laboratory for MSc in IT Management
- General Purpose Computer Laboratories



These laboratories offer state-of-the-art hardware and software facilities:

• **Hardware :**

There are numerous SUN servers and workstations, DELL servers, IBM workstations, over 300 high-speed personal computers, all of which are connected to the high speed 1G Network. In addition, students can access to numerous high-speed Number-crunching machines, and a supercomputer which is one of the fastest academic supercomputers in Hong Kong. The Department also

provides various multimedia accessories and embedded system devices for students' project development. Student can enjoy with 1GB home storage as well.

• **Software:**

1. Server applications :
Sun Solaris, Oracle Server Enterprise Edition, Linux servers, Windows servers, etc.



2. Development applications :
Oracle Internet Developer Suite (iDS) and Oracle Internet Application Suite (iAS), Rational Rose, Matlab, Microsoft MSDN Academic Alliance (MSDN AA) program - the easiest way to get the latest Microsoft software for students in the technology and design fields, etc.

3. Multimedia applications :
Up-to-date multimedia development tools and applications, such as Adobe Creative Suites and Studio, Premiere, etc.



Shaw Campus
逸夫校園

- 1 Shaw Tower (SWT)
逸夫行政樓
- 2 Au Shue Hung Memorial Library (AML)
區樹洪紀念圖書館
- 3 Man Lung Garden
文農學園
- 4 The Wing Lung Bank Building for Business Studies (WLB)
永隆銀行商學大樓
- 5 Lam Woo International Conference Centre (NAB)
林護國際會議中心
- 6 David C. Lam Building (DLB)
思齊樓
- 7 Joint Sports Centre (JSC)
聯校運動中心



Baptist University Road Campus
浸會大學道校園

- 1 Low-rise Building Block 1
社會工作系
- 2 Low-rise Building Block 2
教育學系
- 3 Low-rise Building Block 3
社會學系
- 4 Low-rise Building Block 4
政治及國際關係學系
- 5 Low-rise Building Block 5
體育學系
- 6 Low-rise Building Block 6
物業處
- 7 Low-rise Building Block 7
社會科學院
- 8 Dr. Ng Tor Tai International House (NTT)
吳多泰博士國際中心
- 9 Jockey Club Academic Community Centre (JCACC)
- G/F to 2/F 賽馬會師生活動中心 (地下至二樓)
- 10 Hong Kong Baptist University Kindergarden
- 3/F to 4/F 香港浸會大學附屬幼稚園 (三至四樓)
- 11 School of Continuing Education Tower (SCE)
- 3/F and above 持續教育大樓 (三樓以上)
- 12 Jockey Club School of Chinese Medicine Building (SCM)
賽馬會中醫藥學院大樓
- 13 Student Residence Hall
學生宿舍

Ho Sin Hang Campus
善衡校園

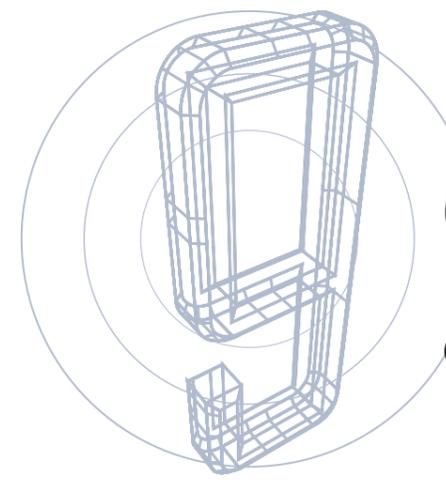
- 1 Au Shue Hung Centre for Film & Television (ASH)
區樹洪影視中心
- 2 Sing Tao Communication Centre (STC)
星島傳理中心
- 3 Christian Education Centre (CEC) - University Chapel
基督教教育中心 - 大學禮拜堂
- 4 Academic Community Hall (ACH)
大學會堂
- 5 Lui Ming Choi Centre (LMC)
呂明才中心
- 6 Oen Hall Building (OEE, OEM & OEW)
溫仁才大樓
- 7 Cha Chi-ming Science Tower (SCT)
查濟民科學大樓
- 8 Yeung Shui Sang Building (YSS)
楊瑞生紀念館
- 9 Fong Shu Chuen Library Building (FSC)
方樹泉圖書館
- 10 Sir Run Run Shaw Building (RRS)
邵逸夫大樓
- 11 Wai Hang Sports Centre (WHS)
偉衡體育中心



- 圖例 LEGEND**
- Vehicular Entrance
車輛入口
 - Carpark
停車場
 - Bank
銀行
 - Carteen / Restaurant
飯堂 / 酒樓
 - Book Shop
大學書局
 - Bus Stop
公共巴士站
 - Light Bus Stop
公共小巴士

- Bus Stops Legend 巴士站圖解**
- A : 80M, 81M, 82M, 88M
 - B : 7, 81C, 81P, 87D, 87X, 270A, 271, 280P, 281P, 287P, N271, N281
 - C : 2B, 2F, 3C, 7, 83P, 85, 85A, 85B, E22
 - D : 208, 103
 - E : 208
 - F : 2B, 2F, 3C, 7, 85, 85A, 85B, E22, 208, 103, 798B
 - G : Under Construction 工程進行中

- By Bus:
2B, 2F, 3C, 7, 70, 72X, 80M, 81C, 81M, 81P, 82M, 83P, 85, 85A, 85B, 86, 86C, 87D, 87P, 87X, 88M, 103, 170, 182, 208, 280P, 281P, 287P, 305, 307, 887, E22, N170, N271, N281
- By MTR : Get off at Kowloon Tong Station, A2 Exit.
Get off at Lok Fu Station, A Exit.
- By KCR: Get off at Kowloon Tong Station, C3 Exit.



Contact Information and Map

Department of Computer Science

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