

eDiscovery Lab

Institute for Creative Industries and Innovation (*iC*)
Queensland University of Technology

Leaders:

Prof. Yuefeng Li and Dr. Yue Xu

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Introduction

- **E-Discovery Lab** focuses on knowledge discovery in digital repositories for smart information use and decision making. It is interested in knowledge and data engineering, information processing and management, as well as innovative applications of knowledge discovery technology
- <http://www.ici.qut.edu.au/projects/ediscovery.jsp>
- Objectives:
 - Making significant scientific contributions to the disciplines;
 - Attracting industry collaborations and international cooperation;
 - Providing IT Consultants for iCi;



Introduction

- ▶ Research Areas:
 - Text Mining, Sentiment Analysis and Natural Language Processing
 - Information Retrieval & Filtering
 - Data Mining and Data Warehousing
 - Web Mining and Personalization
 - Recommender Systems
 - Ontology Learning
 - Social Network
 - Trust and Reputation Management



Introduction cont.

Staff Members:

Prof. Yuefeng Li

Dr. Yue Xu

Dr. Daniel Tao

Dr. Susan Zhou

12 PhD students

2 Research Masters

2 Research Assistants



eDiscovery Funded Projects

- ARC Linkage Project, Title: Web Services Reputation management, 2009–2012, CIs: Yue Xu, Yuefeng Li, Partner: Rumble, \$291,000.
- ARC Discovery Project, Title: Personalized Ontology Learning and Mining for Web Information Gathering, 2009–2011, CI: Yuefeng LI, PI: Ning Zhong, \$225,000.
- CRC smart service project, title: Multi-Channel Content Delivery and Mobile Personalisation, 2008–2009, QUT team: Dian, Yuefeng Li, Yue Xu, \$63,000.
- CRC smart service project, title: Personalisation, 2008–2009, QUT team: Richi Nayak, Yue Xu, Yuefeng Li, \$126,000.
- CRC Construction Innovation project, title: Learning System for Life Prediction of Infrastructure, 2006–2007, QUT team: Richi Nayak, Yue Xu and Yuefeng Li, \$46,460.
- ARC Discovery Project, Title: Automatic Ontology Learning and Data Reasoning in Web Mining, 2005–2008, CIs: Yuefeng Li, Raymond Lau, Yue Xu, \$147,000.
- ATN pilot Grant, title: User profile model for Web-based information gathering, 2003–2004, CIs: Yuefeng Li, Shlomo Geva, Yue Xu, \$11,250.



eDiscovery Impacts

- ▶ **Conference organization**
 - International Workshop on Topic Feature Discovery and Opinion Mining at ICDM 2010, December Sydney.
 - 4th International Conference on Rough Set and Knowledge Technology, Gold Coast, July 2009.
 - WI09 workshop, Web Personalization, Reputation and Recommendation Systems. November, 2009, Italy
 - IEEE/ACM/WIC International Conferences on Web Intelligence and Intelligent Agent Technology, Sydney, December 2008.
 - 4th International Conference on Active Media Technology, Brisbane, May 2006.
- ▶ **Special Issues on**
 - International Journal of Computational Intelligence Systems, 2009
 - International Journal of Pattern Recognition and Artificial Intelligence, 2007.



Selected Journal Publications

- ▶ N. Zhong, Y. Li, and S.-T. Wu, “Effective Pattern Discovery for Text Mining”. Accepted by [*IEEE Transactions on Knowledge and Data Engineering*](#), 14th June 2010.
- ▶ R. Y. Lau, D. Song, Y. Li, T. Cheung, and J. X. Hao, Towards A Fuzzy Domain Ontology Extraction Method for Adaptive e-Learning”, [*IEEE Transactions on Knowledge and Data Engineering*](#), 2009, Vol. 21, No. 6, pp. 800–813.
- ▶ Y. Xu, G. Shaw, and Y. Li, “ Concise Representations for Association rules in Multi-level Datasets”, [*International Journal of Systems Science and Systems Engineering*](#), 2009. Vol. 18, No. 1, pp. 53–70.
- ▶ X. Tao, Y. Li, and N. Zhong. “A Personalized Ontology Model for Web Information Gathering”. Accepted by [*IEEE Transactions on Knowledge and Data Engineering*](#), 1 December 2009.
- ▶ X. Tao, Y. Li, and N, Zhong. “A Knowledge-based Model Using Ontologies for Personalized Web Information Gathering”, to appear in [*Web Intelligence and Agent Systems, an International Journal*](#), 2009.
- ▶ Y. Xu, Y. Li, G. Shaw, “Reliable Representations for Association Rules”, Submitted to [*Data and Knowledge Engineering*](#) (second round), 2009.



Journal publications cont.

- ▶ Y. Li and N. Zhong, Web mining model and its applications on information gathering, *Knowledge-Based Systems* 17: 207–217 (2004).
- ▶ Y. Li, N. Zhong: Mining Ontology for Automatically Acquiring Web User Information Needs. *IEEE Transactions on Knowledge and Data Engineering* 18(4): 554–568 (2006).
- ▶ Y. Xu and Y. Li, Mining Non-redundant Association Rule based on Concise Bases, *International Journal of Pattern Recognition and Artificial Intelligence* 21(4): 695–675 (2007).
- ▶ J. King, Y. Li, X. Tao and R. Nayak, Mining world knowledge for analysis of search engine content, *Web Intelligence and Agent Systems: an international journal* 5(3): 233–253 (2007).
- ▶ R. Lau, O. Wong, Y. Li, and L. Ma: Mining Trading Partners' Preferences for Efficient Multi-Issue Bargaining in e-Business, *Journal of Management Information Systems* 25(1): 81–106 (2008).
- ▶ Y. Xu, Y. Li and G. Shaw, A reliable basis for approximation association rules, *IEEE Intelligent Informatics Bulletin* 9(1): 25–31 (2008).
- ▶ R. Lau, Y. Li, D. Song, and R. Kwok: Knowledge Discovery for Adaptive Negotiation Agents in e-Marketplaces, *Decision Support Systems* 45: 310–323 (2008).
- ▶ W. Yang, Y. Li, J. Wu and Y. Xu, Granule Mining Oriented Data Warehousing Model for Representations of Multidimensional Association Rules, *International Journal of Intelligent Information and Database Systems*, 2008, Vol. 2, No. 1, pp. 125–145.



Top Conference Publications

- ▶ Li Y, Algarni A, Zhong N, (2010) Mining Positive and Negative Patterns for Relevance Feature Discovery, *16th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Washington, USA (KDD 2010)*, 2010, pp. 753–762.
- ▶ Liang H, Xu Y, Li Y, and Nayak R, (2010) Connecting Users and Items with Weighted Tags for Personalized Item Recommendations. *21st ACM Conference on Hypertext and Hypermedia, 2010, Toronto, Canada*, pp. 51–60.
- ▶ A. Algarni, Y. Li, Y. Xu, “Selected new training documents to update user profile”, accepted by 19th ACM International Conference on Information and Knowledge Management (CI0), Toronto, Canada, Oct. 2010.
- ▶ Algarni A, Li Y, Xu Y, Lau R, (2009) An effective model of using negative relevance feedback for information filtering, Proceeding of the eighteenth *ACM Conference on Information and Knowledge Management (CIKM 2009)*, p1605–1608.
- ▶ Sangeetha Kutty, Richi Nayak, Yuefeng Li: XCFS: an XML documents clustering approach using both the structure and the content. *CIKM 2009*: 1729–1732.



Top Conferences Publications cont.

- ▶ Yuefeng Li, [Xujuan Zhou](#), [Peter Bruza](#), [Yue Xu](#), [Raymond Y. K. Lau](#): A two-stage text mining model for information filtering. *CIKM 2008*, USA, 1023–1032.
- ▶ Yuefeng Li, [Sheng-Tang Wu](#), [Xiaohui Tao](#): Effective pattern taxonomy mining in text documents. *CIKM 2008*: 1509–1510.
- ▶ Y. Xu and Y. Li, Generating concise association rules, *ACM 16th Conference on Information and Knowledge Management (CIKM 2007)*, Lisboa, Portugal, pages 781–790.
- ▶ Y. Li, W. Yang and Y. Xu, Multi-Tier Granule Mining for Representations of Multidimensional Association Rules, 6th *IEEE International Conference on Data Mining (ICDM 2006)*, Hong Kong, 2006, 953–958.
- ▶ S.T. Wu, Y. Li and Y. Xu, Deploying Approaches for Pattern Refinement in Text Mining, 6th *IEEE International Conference on Data Mining (ICDM 2006)*, Hong Kong, 2006, 1157–1161.
- ▶ Y. Li and N. Zhong, Interpretations of association rules by granular computing, 3rd *IEEE International Conference on Data Mining (ICDM 2003)*, USA, 2003, 593–596.



Successful Completion of PhD students

- ▶ Sheng–Tang Wu (Sam), Asia University, Taiwan, 2007
 - Outstanding Doctoral Thesis Award (QUT)
- ▶ John King, UQ, 2008
- ▶ Li–Tung Weng (Soloman), Moody's Corporation, 2008
 - Best Paper Award (ICEIS 2008)
- ▶ Xujuan Zhou, QUT, 2009
- ▶ Wanzhong Yang, 2009
- ▶ Xiaohui Tao, QUT, 2009
 - Dean's Award for Academic Excellence (FaST)
 - Best Student Paper Award (RSKT 2009)



eDiscovery Awards

- ▶ **Outstanding Doctoral Thesis**, Knowledge discovery using pattern taxonomy model in text mining, Sam Wu (Supervisors: Yuefeng Li and Yue Xu) , 2007
- ▶ **Dean's Award for Academic Excellence**, PhD for the Discipline of Computer Science, Xiaohui Tao (Supervisors: Yuefeng Li and Richi Nayak), 2009.
- ▶ **Best Paper Award**, Web information recommendation making based on item taxonomy, Soloman Weng, Yue Xu, Yuefeng Li and Richi Nayak, ICEIS 2008.
- ▶ **Best Student Paper Award**, A user profiles acquiring approach using Pseudo-Relevance, Daniel Tao, Yuefeng Li, RSKT 2009.

