Yinghui Wu

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Research Interests

Big data, databases systems and data management, graph data, data quality, cyber security, social network analysis.

Education

2007–2010	**PhD**, *School of Informatics, The University of Edinburgh*, Edinburgh, UK.
2003–2007	**BS**, *Computer Science, Peking University*, Beijing, China.
2004–2007	**BS**, *Economics, Peking University*, Beijing, China.

Experience

2014.8–present	**Assistant Professor**, *School of Electrical Engineering and Computer Science, Washington State University*, Pullman, WA, USA.
2011–2014.8	**Research Scientist**, *Department of Computer Science, University of California, Santa Barbara*, California, USA.

- ***Big data analysis:*** querying, indexing and mining techniques over complex, large networks based on *e.g.,* approximate (keyword) searching and ontology information.
- ***Information network analysis:*** models and techniques to predicate and analyze information cascades over partially observed information networks.
- ***Network security:*** inference techniques for large cyber network causality analysis.

2010–2011	**Research Assistant**, *School of Informatics, The University of Edinburgh*, Edinburgh, UK.

- ***Graph querying:*** query models and techniques for querying complex big graphs.
- ***Data quality:*** data cleaning techniques based on data dependency theories.
- ***Web service analysis:*** novel models to better characterize web service synthesis and composition, from complexity to system implementation.

Publications

(* means authors are listed in alphabetical order.)

Refereed Journal Papers

[1] Wenfei Fan, Xin Wang, **Yinghui Wu***. Answering graph query using views. IEEE Transactions on Knowledge and Data Engineering (TKDE), 2015.

[2] Wenfei Fan, Xin Wang, **Yinghui Wu***. Making Big Graph Small. ACM Transactions on Database Systems (TODS) (In preparation).

[3] Wenfei Fan, Xin Wang, **Yinghui Wu***. Incremental Graph Pattern Matching. ACM Transactions on Database Systems (TODS), 2013.

[4] Wenfei Fan, Jianzhong Li, Jizhou Luo, Zijing Tan, Xin Wang, **Yinghui Wu*** ,2012. Adding regular expressions to graph reachability and pattern queries. Frontiers of Computer Science (FCS) (invited), 2012

[5] Ting Deng, Wenfei Fan, Leonid Libkin, **Yinghui Wu***. On the Aggregation problem for Synthesized Web Services. Journal of Computer and System Science (JCSS) (invited).2011

Refereed Conference Papers

[1] Wenfei Fan, Xin Wang, **Yinghui Wu***, Jingbo Xu. Extending Association Rules with Graph Patterns. The 41th Int. Conf. on Very Large Databases (VLDB), 2015.

[2] **Yinghui Wu**, Shengqi Yang, Xifeng Yan. Summarizing Answer Graphs Induced by Keyword Queries. Proc. of the 40th Int. Conf. on Very Large Databases (VLDB), 2014.

[3] Bo Zong, **Yinghui Wu**, Jie Song, Ambuj Singh, Hasan Cam, Jiawei Han, Xifeng Yan. Towards Scalable Critical Alert Mining (KDD), 2014.

[4] Wenfei Fan, Xin Wang, **Yinghui Wu**, Deng Dong. Distributed Graph Simulation: Impossibility and Possibility. Proc. of the 40th Int. Conf. on Very Large Databases (VLDB), 2014.

[5] Wenfei Fan, Xin Wang, **Yinghui Wu***. Querying Big Graphs within Bounded Resources. ACM SIGMOD Conference on Management of Data (SIGMOD), 2014

[6] Shengqi Yang, **Yinghui Wu**, Huan Sun, Xifeng Yan. Schemaless and Structureless Graph Querying. Proc. of the 40th Int. Conf. on Very Large Databases (VLDB), 2014.

[7] Wenfei Fan, Xin Wang, **Yinghui Wu***. Answering Graph Pattern Queries Using Views. (**Best Paper Runner-up**) Int. Conf. on Data Engineering (ICDE), 2014.

[8] Wenfei Fan, Xin Wang, **Yinghui Wu***. Diversified Top-K Graph Pattern Matching. Proc. of the 40th Int. Conf. on Very Large Databases (VLDB), 2014.

[9] **Yinghui Wu**, Shengqi Yang, Xifeng Yan. Ontology-based Subgraph Querying. (**Best Poster Award**) Int. Conf. on Data Engineering (ICDE), 2013.

[10] Arijit Khan, **Yinghui Wu**, Charu Aggarwal, Xifeng Yan. NeMa: Fast Graph Search with Label Similarity. Proc. of the 39th Int. Conf. on Very Large Databases (VLDB), 2013.

[11] Wenfei Fan, Xin Wang, **Yinghui Wu***. Performance Guarantees for Distributed Reachability Queries. Proc. of the 38th Int. Conf. on Very Large Databases (VLDB), 2012.

[12] Bo Zong, **Yinghui Wu**, Ambuj Singh, Xifeng Yan. Inferring the Underlying Structure of Information Cascades. Int. Conf. on Data Mining (ICDM), 2012.

[13] Wenfei Fan, Jianzhong Li, Xin Wang, **Yinghui Wu***. Querying Preserving Graph Compression. ACM SIGMOD Conference on Management of Data (SIGMOD), 2012

[14] Wenfei Fan, Jianzhong Li, Jizhou Luo, Zijing Tan, Xin Wang, **Yinghui Wu***. Incremental Graph Pattern Matching. ACM SIGMOD Conference on Management of Data (SIGMOD), 2011.

[15] Wenfei Fan, Jianzhong Li, Shuai Ma, Nan Tang, **Yinghui Wu***. Adding Regular Expressions to Graph Reachability and Pattern Queries. Int. Conf. on Data Engineering (ICDE), 2011.

[16] Wenfei Fan, Jianzhong Li, Shuai Ma, Nan Tang, **Yinghui Wu***, Yunpeng Wu. Graph Pattern Matching: From Intractable to Polynomial Time. Proc. of the 36th Int. Conf. on Very Large Databases (VLDB), 2010.

[17] Wenfei Fan, Jianzhong Li, Shuai Ma, Hongzhi Wang, **Yinghui Wu***. Graph Homomorphism Revisited for Graph Matching. Very Large Data Bases (Journal Track), 2010.

[18] Ting Deng, Wenfei Fan, Leonid Libkin, **Yinghui Wu***. On the Aggregation Problem for Synthesized Web Services. The 13th International conference on Database Theory (ICDT), 2010.

[19] Wenfei Fan, Shuai Ma, Yanli Hu, Jie Liu, **Yinghui Wu***. Propagating Functional Dependencies with Conditions. Proc. of the 34th Int. Conf. on Very Large Databases (VLDB), 2008.

Workshop Papers, Demos, and Tutorials

[1] Shengqi Yang, Yanan Xie, **Yinghui Wu**, Tianyu Wu, Huan Sun, Jian Wu, Xifeng Yan. SLQ: A User-friendly Graph Querying System, ACM SIGMOD Conference on Management of Data (SIGMOD), 2014

[2] Wenfei Fan, Xin Wang, **Yinghui Wu***. ExpFinder: Finding Experts by Graph Pattern Matching. Int. Conf. on Data Engineering (ICDE), 2013.

[3] Arijit Khan, **Yinghui Wu**, Xifeng Yan. Emerging Graph Queries in Linked Data. Int. Conf. on Data Engineering (ICDE), 2012.

Teaching and Mentoring Experience

2016.3	**Instructor**, *CPT_S 551 Advanced Databases*, Washington State University (In preparation).
2015.9	**Instructor**, *CPT_S 483-05 Big Data*, Washington State University.
2015.1	**Instructor**, *CPT_S 580-08 Research Topics in Graph Databases*, Washington State University.
2013.9	**Tutor**, *595D Seminar*, University of California Santa Barbara.
2011-2012,2014	**Mentor**, *INSET program*, University of California Santa Barbara.
	- *Juan Zepeda*, undergraduate student in Santa Barbara City College
	- *Lennon Ganz*, undergraduate student in Santa Barbara City College
	A server-client social visualization and querying system: developed SocialViz, a framework for interactive social graph viewing and querying, based on subgraph isomorphism matching.
2008-2011	**Supervisor**, *University of Edinburgh*, Supervised students and projects as follows.
	- *Mohammed Saad Liaqat*, Master Student in School of Informatics, University of Edinburgh.
	Incremental Detection of Inconsistencies Across Different Tables: developed novel incremental methods detecting inconsistencies among different tables in terms of inclusion dependencies with conditions.
	- *Yi Zhang*, Master Student in School of Informatics, University of Edinburgh.
	Detecting Inconsistencies in Distributed Data: developed techniques to detect data inconsistencies in terms of a group of conditional functional dependencies, over a set of distributed data tables.
2008-2011	**Tutor**, *University of Edinburgh*, Courses:.
	QSX: Advanced Topics in Web Databases
	TDD: Research Topics in Distributed Databases

Professional Activities and Services

Grant panelist	NSF III Small DB Misc review panel, 2014
PC-member	WAIM 2015, KDD 2015, SIGMOD 2015, DASFAA 2015, KDIR 2015, JISIC 2014, WAIM 2014, CloudDB 2014, ICDE 2014, KDIR 2014, DASFAA 2014, CIKM 2013, EISIC 2013, CIKM 2012
External reviewer	KDD, SIGMOD, VLDB, ACMBCB, WWW, CIKM
Journal referee	JCSS, TODS, TKDE, Information System (IS), VLDB Journal

Invited Talks

2015	"Big Graph Analytics: A Journey of Scalability and Usability", Pacific Northwest National Laboratory, April 2
2014	"Big Graph Search and Analytics: Scalability and Usability", Northeast Univ., China, Oct 28th
	"Big Graph Search and Analytics: Scalability and Usability", Jilin Univ., China, Oct 27th
	"Big Graph Search and Analytics". Beihang University. China, Oct 25th
	"Graph Analytics: Systems and Usability", Audaque, Shenzhen, China June 15th
2013	"Optimizing Service Reachability Against Network Attacks", Science for Cybersecurity (S4C) workshop, University of Maryland, June 14
	"Ontology-based subgraph querying". The 29th ICDE conference, GDM workshop Brisbane, Australia; ARL Network Science CTA Technical Meeting, University of Delaware
	"Towards advanced search in complex graphs (Invited Talk)", The 29th ICDE conference, GDM workshop, Brisbane, Australia, April 8
2012	"Emerging Graph Queries in Linked Data", IEEE International Conference on Data Engineering, Washington DC, USA, April 1-5

Awards

2014	***Best Paper Runner-up***, ICDE.
2013	***Best Poster Award***, ICDE.
2007	***Engineering and Physical Sciences Research Council scholarship***, EPSRC.
2003	***Award in ACM Program Design Competition***, *Peking University*.

2002   **Provincial second prize**, *National Biology Olympiad*, China.
2002   **Municipal third prize**, *National Mathematics Olympiad*, China.
2002   **Provincial third prize**, *National Chemistry Olympiad*, China.