# 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

(* 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**\*. Incremental Graph Pattern Matching. ACM Transactions on Database Systems (TODS), 2013.

[3] 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

[4] 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, Jingbo Xu, **Yinghui Wu**, Jiaxin Jiang, Zeyu Zheng, Bohan Zhang, Yang Cao, Chao Tian, Parallelizing Sequential Graph Computations. ACM SIGMOD Conference on Management of Data (SIGMOD), 2017.

[2] Lawrence B.Holder, Rajmonda Caceres, David F.Gleich, Jason Riedy, Maleq Khan, Nitesh V.Chawla, Ravi Kumar, **Yinghui Wu**, Christine Klymko, Tina Eliassi-Rad, Aditya Prakash, Current and Future Challenges in Mining Large Networks: Report on the Second SDM Workshop on Mining Networks and Graphs. ACM SIGKDD Explorations Newsletter 18.1: 39-45, 2016.

[3] Qi Song, **Yinghui Wu**, Xin Luna Dong, Mining Summaries for Knowledge Graph Search. The IEEE International Conference on Data Mining series (ICDM), 2016.

[4] Wenfei Fan, **Yinghui Wu***, Jingbo Xu, Functional Dependencies for Graphs. ACM SIGMOD Conference on Management of Data (SIGMOD), 2016.

[5] Shengqi Yang, Fangqiu Han, **Yinghui Wu**, Xifeng Yan, Fast Top-k Search in Knowledge Graphs. Int. Conf. on Data Engineering (ICDE), 2016.

[6] Wenfei Fan, **Yinghui Wu***, Jingbo Xu, Adding Counting Quantifiers to Graph Patterns. ACM SIGMOD Conference on Management of Data (SIGMOD), 2016.

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

[8] Predrag T.Tosic, **Yinghui Wu**. Towards networks of search engines and other digital experts: a distributed intelligence approach. The 8th IEEE Int. Conf. on u-and-e-Service, Science and Technology (UNESST), 2015.

[9] **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.

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

[11] 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.

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

[13] 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.

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

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

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

[17] 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.

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

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

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

[21] 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.

[22] 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.

[23] 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.

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

[25] 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.

[26] 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.

## Grants

[4] NSF BIGDATA: Collaborative Research: F: Association Analysis of Big Graphs: Models, Algorithms and Applications, $600,000, Yinghui Wu (PI), Tingjian Ge (PI) (University of Massachusetts Lowell), 2016.

[1] Google Faculty Research Award 13J-3820-8010, $35,000, Yinghui Wu (PI), Janardhan Rao Doppa (co-PI), "Adaptive Graph Search". 2015.

## Teaching and Mentoring Experience

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| Spring 16 | **Instructor**, *CPT_S 580-06 Advanced Databases*, Washington State University. |
| Fall 15/16 | **Instructor**, *CPT_S 483-05 Big Data*, Washington State University. |
| Spring 15 | **Instructor**, *CPT_S 580-08 Research Topics in Graph Databases*, Washington State University. |
| Fall 13 | **Tutor**, *595D Seminar*, University of California Santa Barbara. |
| 2011-2012,2014 | **Mentor**, *INSET program*, University of California Santa Barbara.<br>- *Juan Zepeda*, undergraduate student in Santa Barbara City College<br>- *Lennon Ganz*, undergraduate student in Santa Barbara City College<br>**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.<br>- *Mohammed Saad Liaqat*, Master Student in School of Informatics, University of Edinburgh.<br>**Incremental Detection of Inconsistencies Across Different Tables:** developed novel incremental methods detecting inconsistencies among different tables in terms of inclusion dependencies with conditions.<br>- *Yi Zhang*, Master Student in School of Informatics, University of Edinburgh.<br>**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:.<br>*QSX: Advanced Topics in Web Databases*<br>TDD: Research Topics in Distributed Databases |

## Professional Activities and Services

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| Grant panelist | NSF grant review panel 14; DHS Centor of Excellence grant review panel 16 |
| PC-member | KDD 15-16, SIGMOD 15-16, VLDB 13-16, SDM-workshop 15-16, WAIM 14-16, APWeb 16, DASFAA 14-15, KDIR 14-16, JISIC 14, CloudDB 14, ICDE 14, ICDT/EDBT 14, CIKM 12-13, 15, EISIC 13-14, GraphQ (workshop) 15-16 |

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| Journal referee | JCSS, TODS, TKDE, Information System (IS), VLDB Journal, TPDS |
| External reviewer | KDD, SIGMOD, VLDB, ACMBCB, WWW, CIKM |
| Session chair | ICDE 2013 |

## Awards

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| 2015 | **Google Faculty Research Award**. |
| 2014 | **Best Paper Runner-up**, ICDE. |
| 2013 | **Best Poster Award**, ICDE. |
| 2007 | **Engineering and Physical Sciences Research Council scholarship**, EPSRC. |