Dr Yinghui Wu

6282 Avenida Ganso | Goleta, 93117, CA, USA | C: (805)-679-1982 | yinghuiwu.ed@gmail.com

EDUCATION

PhD, School of Informatics, The University of Edinburgh, UK 2007-2010
Thesis: Extending Graph Homomorphism and Simulation for Real-life Graph Matching
BS, Major in Computer Science, Peking University, Beijing, China. 2003-2007
Double Major in Economics, Peking University, Beijing, China. 2004-2007

EXPERIENCE

Department of Computer Science, UCSB, USA 08/2011-now
Research Scientist

06/2007 – 08/2010
School of Informatics, University of Edinburgh, UK
PhD student, Supervisor: Professor Wenfei Fan

Key projects led and participated:

- **Graph Pattern Queries**: (1) developed novel query patterns revising traditional homomorphism and simulation, capturing complex user requirement in social networks, (2) developed generalized query model by adding regular expressions, increasing the expressing power without rising computation complexity; and (3) studied the fundamental problems (e.g., minimization and containment).
- **Incremental Graph (Pattern) Matching:** developed incremental graph pattern matching solutions over large (social) networks, from traditional metric (e.g., isomorphism) to novel simulation-based metrics (e.g., bounded simulation), for both theoretical analysis and system implementation.
- **Data Quality**: (1) developed techniques to detect the propagation of novel data dependencies with conditions, which benefits data cleaning and data repairing, and (2) studied the fundamental problems (e.g., implication) of the novel data dependencies.
- **Web Service Aggregation:** (1) developed novel models to better characterize web service synthesis and composition, especially the complexity of web service selection satisfying user defined aggregation functions, and (2) studied the efficient heuristics for realizing web service mediators.

School of Informatics, University of Edinburgh, UK 06/2007 – 08/2011
Teaching Assistant

Supervised projects and students:

- **Incremental Detection of Inconsistencies Across Different Tables :** developed novel incremental methods detecting inconsistencies among different tables in terms of a group of conditional inclusion dependencies. Master student: **Mohammed Saad Liaqat**
- **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. Master student: **Yi Zhang**

Research Laboratory of Databases and Information Systems, Peking University, Beijing 2005 -2007
Research Assistant

Key projects: team leader and main developer

- **Data-driven visualization system for network security situation awareness:** developed a novel visualization system driven by stream data for Internet situation awareness.

RESEARCH INTERESTS

- **Graph database and network analysis**: novel static and dynamic graph pattern matching and network querying metric and methods for large real-life networks, e.g., social networks, as well as theoretical complexity analysis.
- **Data quality**: novel data constraints with conditions to model the quality of data; methods to detect propagations of the dependencies over views; theoretical analysis of the fundamental problems for the novel data dependencies.
- **Web services:** novel models for web service composition and verification based on alternating automata; efficient web service composition, synthesis and aggregation using graph matching.
- **Information visualization:** data-driven, real-life visualization systems for networks.

PUBLICATIONS

(Authors are listed in alphabetical order.)

- Wenfei Fan, Jianzhong Li, Xin Wang, and Yinghui Wu. Query Preserving Graph Compression. *ACM SIGMOD Conference on Management of Data (SIGMOD)*, 2012
- Ting Deng, Wenfei Fan, Leonid Libkin, and Yinghui Wu. On the Aggregation problem for Synthesized Web Services, *Journal of Computer and System Sciences (JCSS)*, to appear (invited).
- Wenfei Fan, Jianzhong Li, Shuai Ma, Nan Tang, Yinghui Wu. Adding Regular Expressions to Graph Reachability and Pattern Queries. *Frontiers of Computer Science (FCS)* , to appear in 2012 (invited).
- Arijit Khan , Yinghui Wu and Xifeng Yan, "Emerging Graph Queries In Linked Data" (tutorial), in Seminar of International Conference in Data Engineering 2012 (ICDE 2012).
- Wenfei Fan, Jianzhong Li, Jizhou Luo, Zijing Tan, Xin Wang, and Yinghui Wu. Incremental Graph Pattern Matching, *ACM SIGMOD Conference on Management of Data (SIGMOD)*, 2011
- Wenfei Fan, Jianzhong Li, Shuai Ma, Nan Tang, Yinghui Wu. Adding Regular Expressions to Graph Reachability and Pattern Queries. The 27th International Conference on Data Engineering (ICDE): 2011.
- Wenfei Fan, Jianzhong Li, Shuai Ma, Nan Tang, Yinghui Wu, Yunpeng Wu. Graph Pattern Matching: From Intractable to Polynomial Time. The 36th International Conference on Very Large Databases (VLDB): 2010.
- Wenfei Fan, Jianzhong Li, Shuai Ma, Hongzhi Wang, Yinghui Wu. Graph Homomorphism Revisited for Graph Matching. Very Large Data Bases (Journal Track), 2010.
- 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.
- Wenfei Fan, Shuai Ma, Yanli Hu, Jie Liu, Yinghui Wu. Propagating Functional Dependencies with Conditions. The 34th International Conference on Very Large Databases (VLDB): 2008.

TALKS

- "Simulation revised for graph pattern matching". LFCS DB seminar, Edinburgh, 10th November, 2010.
- "Graph Homomorphism Revisited for Graph Matching". The 36th International Conference on Very Large Databases (VLDB), Singapore, 16th September, 2010.
- "Homomorphism revised for real life graph matching", LFCS meeting, Edinburgh, 24th August, 2010.

AWARDS

2003 ***Award in ACM Program Design Competition***, *Peking University*, China.

2002 ***Provincial second prize***, *National High School Biology Olympiad*, China.

2002 ***Municipal third prize***, *National High school Mathematics Olympiad*, China.

2002 ***Provincial third prize***, *National High school Chemistry Olympiad*, China.

2002 ***Provincial third prize***, *High School English Proficiency Contest*, Anhui Province, China.

PROFESSIONAL ACTIVITIES

External reviewer of VLDB 2012

TECHNICAL SKILLS

Languages	Java, C, C++, SQL, PHP
Softwares	SQL Server, IBM DB2, MySQL, Oracle, 3Ds Max, Flash MX, Dreamweaver

INTERESTS

Art design	Website design, Poster design, Chinese Ink painting, Sketch
Literature	Poems, History, Philosophy