

Lu-An Tang

Researcher, Autonomic Management Department
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Research Interests

Data mining, Data management, Cyber-physical system and Cyber security, with a focus on modeling novel problems and proposing scalable solutions for large-scale, real-world applications.

Education

University of Illinois at Urbana-Champaign
Ph.D., Computer Science

Urbana-Champaign, IL, United States
Aug. 2008 - Aug. 2013

Peking University
M.Eng., College of Engineering

Beijing, China
Sept. 2004 - July 2007

Peking University
B.Sc., College of Engineering

Beijing, China
Sept. 2000 - June 2004

Work Experience

Autonomic Management Department, NEC Laboratories America, Inc
Researcher

Princeton, NJ
Aug. 2013 - present

Focus on mining big data from industry systems and designing efficient algorithms to enhance the system security and performance.

Data and Information Systems Research Lab, Dept. of Computer Science, UIUC
Research Assistant

Champaign, IL
Aug. 2008 - Aug. 2013

Advisor: Prof. Jiawei Han

Systematically study the problems of information analysis and knowledge discovery in mobility and sensor data, propose new models, methodologies and algorithms for solving real-world problems with a wide range of domain specific applications. Along this line, research papers have been published in the major conferences and journals (e.g., KDD'13, ICDE'12, SDM'12, ICDM'10).

Microsoft Research Asia
Research Intern

Beijing, China
May. 2010 - Aug. 2010, May. 2011 - Aug. 2011

Mentors: Dr. Yu Zheng and Dr. Xing Xie

Conduct research projects on movement data mining and ubiquitous system, propose the models and algorithms to discover moving patterns from taxi trajectories and mobility data. Research papers have been published in several major conferences (e.g., SSTD'10, ICDE'12).

Intelligent Web Application Research Lab, Dept. of Intelligence Science, PKU
Research Assistant

Beijing, China
Nov. 2003 - July. 2007

Advisor: Prof. Hongyan Li

Conduct research projects on data stream management and web information system construction, propose algorithms to discover evolution patterns over medical data stream. Research papers have been published in several major conferences and journals (e.g., SIGMOD'07, JCST'08).

Teaching Experience

Course: Introduction to Data Mining
Teaching Assistant

University of Illinois at Urbana-Champaign
Fall 2009 - 2012

Introduction to Data Mining (CS 412) is a core course in computer science, designed for senior undergraduates and graduates, with a class size of more than 150 students. I have been the lead TA of this course for four years. The responsibility includes: (1) giving lectures when the instructor is traveling; (2) holding office hours to meet students in every week; (3) advising the students with course projects; (4) providing additional tutorials to help the students with machine problems, assignments, midterm and final exams. I have received the outstanding TA award in April, 2013.

Publications

Journal papers

1. **Lu-An Tang**, Yu Zheng, Jing Yuan, Jiawei Han, Alice Leung, Wen-Chih Peng, Thomas La Porta, *A Framework of Traveling Companion Discovery on Trajectory Data Streams*, Accepted by ACM Transactions on Intelligent Systems and Technology (ACM TIST).
2. **Lu-An Tang**, Xiao Yu, Sangkyum Kim, Quanquan Gu, Jiawei Han, Alice Leung, Thomas La Porta, *Trustworthiness Analysis of Sensor Data in Cyber-Physical Systems*, Special Issue on Data Warehousing and Knowledge Discovery from Sensors and Streams, Journal of Computer and System Sciences (JCSS), 2012.
3. **Lu-An Tang**, Xiao Yu, Sangkyum Kim, Jiawei Han, Wen-Chih Peng, Yizhou Sun, Alice Leung, Thomas La Porta, *Multidimensional Sensor Data Analysis in Cyber-Physical Systems: An Atypical Cube Approach*, International Journal of Distributed Sensor Networks, 2012.
4. Zhenhui Li, Jiawei Han, Ming Ji, **Lu-An Tang**, Yintao Yu, Bolin Ding, Jae-Gil Lee, and Roland Kays, *MoveMine: Mining Moving Object Data for Discovery of Animal Movement Patterns*, ACM Transactions on Intelligent Systems and Technology (ACM TIST) (Special Issue on Computational Sustainability), 2010.
5. **Lu-An Tang**, Bin Cui, Hong-Yan Li, Gao-Shan Miao, Dong-Qing Yang, Xin-Biao Zhou, *PGG: An online pattern based approach for stream variation management*. Journal of Computer Science and Technology (JCST), 2008.

Conference tutorial

6. Jiawei Han, Zhenhui Li, **Lu-An Tang**, *Mining Moving Object, Trajectory and Traffic Data*, in Proc. of International Conference on Database Systems for Advanced Applications (DASFAA), 2010.

Research Papers Published in Refereed International Conferences

7. **Lu-An Tang**, Xiao Yu, Quanquan Gu, Jiawei Han, Alice Leung, and Thomas La Porta, *Mining Lines in the Sand: On Trajectory Discovery From Untrustworthy Data in Cyber-Physical System*, in Proc. of 2013 ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD), 2013. (Acceptance rate: 17%, Invited to the special issue of ACM TKDD as “best papers of KDD 2013”)
8. **Lu-An Tang**, Yu Zheng, Jing Yuan, Jiawei Han, Alice Leung, Chih-Chieh Hung, and Wen-Chih Peng, *On Discovery of Traveling Companions from Streaming Trajectories*, in Proc. of IEEE International Conference on Data Engineering (ICDE), 2012. (Acceptance rate: 17%)
9. **Lu-An Tang**, Yu Zheng, Jing Yuan, Jiawei Han, Alice Leung, Chih-Chieh Hung, and Wen-Chih Peng, *On Discovery of Traveling Companions from Streaming Trajectories*, in Proc. of IEEE International Conference on Data Engineering (ICDE), 2012. (Acceptance rate: 17%)
10. **Lu-An Tang**, Xiao Yu, Sangkyum Kim, Jiawei Han, Wen-Chih Peng, Yizhou Sun, Hector Gonzalez, Sebastian Seith, *Multidimensional Analysis of Atypical Events in Cyber-Physical Data*, in Proc. of IEEE International Conference on Data Engineering (ICDE), 2012. (Acceptance rate: 17%)
11. **Lu-An Tang**, Quanquan Gu, Xiao Yu, Jiawei Han, Thomas La Porta, Alice Leung, Tarek Abdelzaher, and Lance Kaplan, *IntruMine: Mining Intruders in Untrustworthy Data of Cyber-Physical Systems*, in Proc. of SIAM International Conference on Data Mining (SDM), 2012. (Acceptance rate: 27%)
12. **Lu-An Tang**, Yu Zheng, Xing Xie, Jing Yuan, Xiao Yu, Jiawei Han, *Retrieving k -Nearest Neighboring Trajectories by a Set of Point Locations*, in Proc. of International Symposium on Spatial and Temporal Databases (SSTD), 2011. (Acceptance rate: 38%)

13. Xiao Yu, Ang Pan, **Lu-An Tang**, Zhenhui Li, Jiawei Han, *Geo-Friends Recommendation in GPS-based Cyber-physical Social Network*, in Proc. of International Conference on Advances in Social Network Analysis and Mining (ASONAM), 2011. (Acceptance rate: 25%)
14. **Lu-An Tang**, Xiao Yu, Sangkyum Kim, Jiawei Han, Chih-Chieh Hung, and Wen-Chih Peng, *Tru-Alarm: Trustworthiness Analysis of Sensor Networks in Cyber-Physical Systems*, in Proc. of International Conference on Data Mining (ICDM), 2010. (Acceptance rate: 19%)
15. Xiao Yu, **Lu-An Tang**, Jiawei Han, *Filtering and Refinement: A Two-Stage Approach for Efficient and Effective Anomaly Detection*, in Proc. of International Conference on Data Mining (ICDM), 2009. (Acceptance rate: 17%)
16. Cyrus Shahabi, **Lu-An Tang**, Songhua Xing, *Indexing Land Surface for Efficient kNN Query*, in Proc. of International Conference on Very Large Databases (VLDB), 2008. (Acceptance rate: 16%)
17. **Lv-an Tang**, Bin Cui, Hongyan Li, Gaoshan Miao, Dongqing Yang, Xinbiao Zhou, *Effective variation management for pseudo periodical streams*, in Proc. of ACM International Conference on Management of Data (SIGMOD), 2007. (Acceptance rate: 14%, Lv-an Tang is my used name before 2008.)
18. **Lv-an Tang**, Hongyan Li, Baojun Qiu, Meimei Li, Jianjun Wang, Lei Wang, Bin Zhou, Dongqing Yang, Shiwei Tang, *WISE: A Prototype for Ontology Driven Development of Web Information Systems*, in Proc. of International Asia-Pacific Web Conference (APWeb) 2006. (Acceptance rate: 25%)
19. Meimei Li, Hongyan Li, **Lv-an Tang**, Baojun Qiu, *DOPA: A Data-Driven and Ontology-Based Method for Ad Hoc Process Awareness in Web Information Systems*, in Proc. of International Conference of Web Information System Engineering (WISE), 2006. (Acceptance rate: 34%)
20. **Lv-an Tang**, Hongyan Li, Zhiyong Pan, Shaohua Tan, Baojun Qiu, Shiwei Tang, Jianjun Wang, *PODWIS: A Personalized Tool for Ontology Development in Domain Specific Web Information System*, in Proc. of International Asia-Pacific Web Conference (APWeb), 2005. (Acceptance rate: 17%)
21. **Lv-an Tang**, Hongyan Li, Zhiyong Pan, Dongqing Yang, Meimei Li, Shiwei Tang, Ying Ying, *An Ontology Based Approach to Construct Behaviors in Web Information Systems*, in Proc. of International Conference on Web-Age Information Management (WAIM), 2005. (Acceptance rate: 20%)

System Demos selected in the Demo Program of Int. Confs.

22. Zhenhui Li, Ming Ji, Jae-Gil Lee, **Lu-An Tang**, Yintao Yu, Jiawei Han, Roland Kays, *MoveMine: mining moving object databases*, System Demo, in Proc. of ACM International Conference on Management of Data (SIGMOD), 2010. (Acceptance rate: 36%)

Honors and Awards

- [2013.4] Outstanding Teaching Assistant Award, Dept. of Computer Science, UIUC
- [2012.10] Data Mining Research Bronze Award, Data Mining Research Group, CS, UIUC
- [2012.9] Yahoo!-DAIS Research Excellence Silver Award, Data and Information Systems Research Laboratory, CS, UIUC
- [2012.3] NSF ICDE 2012 Travel Scholarship
- [2012.3] Data Mining Research Silver Award, Data Mining Research Group, CS, UIUC
- [2011.10] Excellent Summer Internship Award, Microsoft Research Asia
- [2010.12] ICDM 2011 Travel Award
- [2010.10] Excellent Summer Internship Award, Microsoft Research Asia
- [2007.8] Annenberg Fellowship, USC
- [2007.7] Outstanding Graduate Student Honor, Peking University
- [2006.6] Academic Innovation Award, Peking University

- [2006.6] Samsung Scholarship, Peking University
- [2005.12] Second Prize of “IBM CUP” Campus Creation Design Competition (Team leader, ranked 3 in the 265 participants)
- [2005.6] Academic Innovation Award, Peking University
- [2005.6] “May 4th” Scholarship, Peking University
- [2004.7] Excellent Final Thesis of Bachelor Degree, Peking University
- [2004.6] Tri-Excellent Student Honor, Peking University

Professional Service

Information Coordinator:

Information coordinator for *ACM Transaction on Knowledge Discovery in Data* (ACM TKDD), from 2008 to 2011.

Program Committee:

Program Committee Member for *International Conference Theory and Practice in Modern Computing 2012 and 2013*, *International Workshop on Human Mobility Computing 2013*.

Journal Reviewer:

ACM Transactions on Database Systems (ACM TODS)

The VLDB Journal (VLDB J.)

IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)

ACM Transactions on Knowledge Discovery from Data (ACM TKDD)

International Journal on Advances of Computer Science for Geographic Information Systems (GeoInformatica)

Journal of Distributed and Parallel Databases (DAPD)

Conference External Reviewer:

KDD (2009, 2010, 2011, 2012), ICDM (2008, 2009), SDM (2008, 2009, 2010, 2011), SIGMOD (2008), VLDB (2008, 2009), ICDE (2009, 2010, 2012), WSDM (2010, 2011), WWW (2010, 2011, 2012)