

CHUNG-WEI HANG

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RESEARCH INTERESTS

- Question answering, natural language processing
- Artificial intelligence, multiagent systems, probabilistic trust models, trust and reputation systems, recommender systems
- Social networks, social computing, trust propagation
- Service-oriented computing, service selection and composition

EXPERIENCE

IBM WATSON

Advisory Software Engineer

Durham, NC

June 10, 2013–Present

- Work on Watson Discovery, a cloud service that allows customers to ingest, query, and analyze a collection of documents
- Develop open domain factoid question answering systems
- Develop Watson Engagement Advisor, a system extended from IBM Watson for Jeopardy! that answers natural language questions based on domain specific textual documents.

NORTH CAROLINA STATE UNIVERSITY

Postdoctoral Researcher

Raleigh, NC

June 27, 2011–June 7, 2013

- Build an agent-based model in stock trading context; study how credibility of information (e.g., instant messages) can affect agents' decision making (i.e., stock trading); evaluate information credibility based on latent topics, causality analysis, sentiment analysis, etc.
- Develop an argumentation with evidence framework; formalize existing trust models as instances of the framework; study theoretical properties of the proposed framework.
- Apply trust models to place-aware applications; recognize and recommend places and activities from locations and social information.

NORTH CAROLINA STATE UNIVERSITY

Graduate Research Assistant (part-time)

Raleigh, NC

August 16, 2008–June 24, 2011

- Build probabilistic trust and reputation models to facilitate decentralized coordination in multiagent systems.
- Develop approaches for agents to infer trustworthiness of others based on direct interaction and referrals from third parties.
- Propose parameter-free trust model that enables autonomous agents to dynamically update trustworthiness of others with changing behavior.
- Enhance existing trust-based applications in terms of flexibility (e.g., personalization and customization) and applicability (e.g., incorporating sparse information).
- Implement and evaluate proposed approaches on real datasets including social networks: PGP, FilmTrust, Advogato, and rating networks: Epinions, MovieLens, Jester.
- Design trustworthy service selection approach that formalizes service composition, infer trustworthiness of constituent services behind compositions based on composite quality, and evaluate services based on preferences and service quality.

MICROSOFT RESEARCH

Research Intern

14865 NE 36th St, Redmond, WA

May 28–August 15, 2008

Explore a semantic approach of improving recommendations by combining multiple semantic graphs, e.g., improving movie recommendations on MSN Movies by combining semantic graphs from MSN Movies and IMDB.

EDUCATION

NORTH CAROLINA STATE UNIVERSITY

2006–2011

PhD in Computer Science (GPA: 4.0/4.0)

Advisor: Dr. Munindar P. Singh

Dissertation: Probabilistic Trust Models for Social and Service Networks

NATIONAL CHIAO TUNG UNIVERSITY

Master of Science in Computer and Information Science (GPA: 3.78/4.0)

2002–2004

Advisor: Dr. Chuen-Tsai Sun

Thesis: A Decentralized Multi-agent Service Lookup Mechanism

Bachelor of Science in Computer and Information Science

1998–2002

PUBLICATIONS

JOURNAL PAPERS

- [J1] Nirav Ajmeri, **Chung-Wei Hang**, Simon D. Parsons, and Munindar P. Singh. “Aragorn: Eliciting and Maintaining Secure Service Policies.” *IEEE Computer*, Volume 50, Issue 12, pages 50–58, 2017.
- [J2] **Chung-Wei Hang**, Zhe Zhang, and Munindar P. Singh. “Shin: Generalized Trust Propagation with Limited Evidence.” *IEEE Computer*, Volume 46, Issue 3, pages 78–85, 2013.
- [J3] **Chung-Wei Hang** and Munindar P. Singh. “Generalized Framework for Personalized Recommendations in Agent Networks.” *Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)*, Volume 25, Issue 3, pages 475–498, 2012.
- [J4] Yonghong Wang, **Chung-Wei Hang**, and Munindar P. Singh. “A Probabilistic Approach for Maintaining Trust Based on Evidence.” *Journal of Artificial Intelligence Research (JAIR)*, Volume 40, pages 221–267, 2011.
- [J5] **Chung-Wei Hang** and Munindar P. Singh. “Trustworthy Service Selection and Composition.” *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, Volume 6, Issue 1, pages 5:1–5:17 plus an online appendix of 6 pages, February 2011.

CONFERENCE PAPERS

- [C6] Guangchao Yuan, **Chung-Wei Hang**, Michael N. Huhns, Munindar P. Singh. “A Mechanism for Cooperative Demand-Side Management.” *Proceedings of the 37th IEEE International Conference on Distributed Computing Systems (ICDCS)*, pages 361–371. Atlanta, USA, June 2017.
- [C7] Yuqing Tang, **Chung-Wei Hang**, Simon Parsons, Munindar P. Singh. “Towards Argumentation with Symbolic Dempster-Shafer Evidence.” *Proceedings of the 4th International Conference on Computational Models of Argument (COMMA)*, pages 462–469. Vienna, Austria, September 2012.
- [C8] **Chung-Wei Hang**, Anup K. Kalia, and Munindar P. Singh. “Behind the Curtain: Service Selection via Trust in Composite Services.” *Proceedings of the 19th International Conference on Web Services (ICWS)*, pages 9–16. Honolulu, Hawaii, June 2012.
- [C9] **Chung-Wei Hang** and Munindar P. Singh. “From Quality to Utility: Adaptive Service Selection Framework.” *Proceedings of the 8th International Conference on Service Oriented Computing (ICSOC)*, pages 456–470. San Francisco, USA, December 2010.
- [C10] **Chung-Wei Hang**, Yonghong Wang, and Munindar P. Singh. “Operators for Propagating Trust and their Evaluation in Social Networks.” *Proceedings of the 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1025–1032. Budapest, Hungary, May 2009.
- [C11] **Chung-Wei Hang**, Yonghong Wang, and Munindar P. Singh. “An Adaptive Probabilistic Trust Model and its Empirical Evaluation (Short Paper).” *Proceedings of the 7th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1485–1488. Estoril, Portugal, May 2008.

WORKSHOP PAPERS

- [W12] **Chung-Wei Hang** and Munindar P. Singh. “Trust-based Recommendation based on Graph Similarity.” *The 13th AAMAS Workshop on Trust in Agent Societies*. Toronto, Canada, May 2010.

- [W13] **Chung-Wei Hang** and Munindar P. Singh. “Selecting Trustworthy Service in Service-Oriented Environments.” *The 12th AAMAS Workshop on Trust in Agent Societies*. Budapest, Hungary, May 2009.
- [W14] **Chung-Wei Hang**. “A decentralized multi-agent service lookup mechanism: cooperation and communication without center agents in RoboCup rescue.” *The 2nd International Workshop on Collaboration Agents*, pages 21–28, Beijing, China, September 2004.

TEACHING
EXPERIENCE

NORTH CAROLINA STATE UNIVERSITY

Raleigh, NC

Teaching Assistant

Fall 2006, Spring 2007, Fall 2007, Spring 2008

Course: CSC513 E-Commerce Technologies (graduate)

Design and grade programming assignments, lead discussion, hold office hours.

NATIONAL CHIAO TUNG UNIVERSITY

Hsinchu, Taiwan

Teaching Assistant

Fall 2003

Course: Evolutionary Computation (graduate)

Grade assignments and projects

PROFESSIONAL
SERVICES

PROGRAM COMMITTEE

National Conference on Artificial Intelligence (AAAI), 2012, 2013

International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2013, 2014

IEEE International Conference on Distributed Computing Systems (ICDCS), 2017

International Joint Conference on Natural Language Processing (IJCNLP), 2017

International Conference on Privacy, Security and Trust (PST), 2012–2016

International Conference on Mobile Web Information Systems (MobiWIS), 2012

AAAI Workshop on Incentives and Trust in E-Communities (WIT-EC) 2015, 2016

IEEE Fourth International Workshop on Scientific Workflows (SWF), 2010

IEEE International Conference on Mobile Services, 2013

Int’l Conference on Principles and Practice of Multi-Agent Systems (PRIMA), 2010, 2011

International Workshop on Trustworthy Multi-Agent Systems (TruMAS) 2012

JOURNAL REVIEWER

ACM Transactions on Intelligent Systems and Technology (TIST)

ACM Transactions on Internet Technology (TOIT)

ACM Transactions on Interactive Intelligent Systems (THIS)

ACM Transactions on Web (TWEB)

ACM Computing Surveys

Advances in Complex Systems (ACS)

Ad Hoc Networks

AI Communications

Artificial Intelligence (AIJ)

Computational Intelligence

IEEE Internet Computing

IEEE Transactions on Systems, Man, and Cybernetics (SMC), Part C

IEEE Transactions on Services Computing (TSC)

Information Science (INS)

Journal of Ambient Intelligence and Humanized Computing (AIHC)

Journal of Artificial Intelligence Research (JAIR)

Journal of Social Network Analysis and Mining (SNAM)

Journal of Trust Management

Knowledge and Information Systems (KAIS)

Mobile Networks and Applications (MONET)

User Modeling and User-Adapted Interaction (UMUAI)

CONFERENCE/WORKSHOP REVIEWER

International Joint Conference on Artificial Intelligence (IJCAI), 2016, 2017

AAMAS Workshop on Trust in Agent Societies (Trust), 2009–2011

IEEE Conference on Commerce and Enterprise Computing (CEC), 2010

International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2012, 2015
 International Conference on Service Oriented Computing (ICSOC), 2010, 2012
 International Conference on Web Services (ICWS), 2009
 International Conference on Reputation (ICORE), 2009
 Int'l KES Conf. on Agents & Multi-agent Systems—Technologies & Applications, 2012

HONORS AND MEMBERSHIPS

Phi Kappa Phi Collegiate Honor Society
 North Carolina State University Outstanding Teaching Assistant Award
 NC State UGSA Travel Fund
 Cisco Travel Grant
 AAMAS 2009 Scholarships

OTHER EXPERIENCE **APLIX CORPORATION**

Taipei, Taiwan

Intern

Summer 2006

Develop a Blu-ray Disc Java (BD-J) benchmark library for one of the largest JVM companies in Asian industry; implement a BD-J baseball broadcast application, which supports interactive features such as picture-in-picture playing, network and local storage access.

INSTITUTE FOR INFORMATION INDUSTRY

Taipei, Taiwan

Software Engineer (part-time)

Fall 2005–Spring 2006

Participate in J2EE-based ticket and financial management systems for Taipei Rapid Transit Corporation. The distributed system is deployed in more than 60 subway stations across Taipei urban areas, to provide ticket flow management, parking management, employee management, and auditing process for the metro system which has more than 1M passengers every day.

iaSOLUTION INC.

Hsinchu and Taipei, Taiwan

Software Engineer (part-time)

Fall 2000–Spring 2003

Develop AQUA (Java GUI framework and application front-end for PDA devices), J2EE-based and J2ME mobile applications for hand-held devices. iaSolution Inc., a start-up in 2000 and then acquired by Aplx Corp. in 2004, provides Java solutions for handheld devices.

TALKS AND PAPER PRESENTATIONS

“Making Predictions and Recommendations via Trust in Multiagent Systems”,
 National Taiwan University, Taipei, April 2, 2012
 Microsoft Research Asia, Beijing, March 29, 2012

“From Quality to Utility: Adaptive Service Selection Framework”,
 International Conference on Service-Oriented Computing, San Francisco, December 10, 2010

“Trust-based Recommendation based on Graph Similarity”,
 AAMAS Workshop on Trust in Agent Societies, Toronto, May 10, 2010

“Operators for Propagating Trust and their Evaluation in Social Networks”,
 Int'l Conference on Autonomous Agents and Multiagent Systems, Budapest, May 15, 2009

“Selecting Trustworthy Service in Service-Oriented Environments”,
 AAMAS Workshop on Trust in Agent Societies, Budapest, May 11, 2009

“Trustworthy Service Selection and Composition”,
 AAMAS Doctoral Mentoring, Budapest, May 10, 2009

“Improving Recommendations by Semantically Combining Information Graphs”,
 Microsoft Research Internship Seminar, Redmond, WA, August 14, 2008