Dr. Jingshan Huang *Curriculum Vitae*

Assistant Professor
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RESEARCH INTERESTS

Information Technology, Machine Intelligence, and Computational Biology
Ontology Matching/Alignment, Ontology Quality
Distributed Heterogeneous Information Management
Semantic Web and Web Services
Biomedical Knowledge Inference

EDUCATION

Ph.D., Computer Science, University of South Carolina 2007
Dissertation: *Towards Mutual Understanding: Rule-Based and Learning-Based Matching Algorithms for Ontologies*
Master of Engineering, Computer Science, University of South Carolina 2004
Bachelor of Engineering, Computer and Application, Fuzhou University 2001

WORK EXPERIENCE

Assistant Professor, Benedict College (August 2007 – Present)

Courses Offered:
CSC 138 – Algorithm Design and Programming II with C/C++
CSC 231 – Assembly Language
CSC 333 – Data Structures
CSC 435 – Software Engineering
CSC 434 – Database Management
CSC 436 – Operating System
CSC 431 – Programming Languages

Research Specialist III, Medical University of South Carolina (June 2007 – August 2007)

Duties Overview:
I was doing research in Biological Ontology Alignment and Knowledge Inference, under the supervision of Dr. W. Jim Zheng.

Research Assistant, University of South Carolina, **BALER Project** (May 2006 – May 2007)

Project Overview:
This is a joint research project with Oculus Info, HNC/Fair Isaac, SUNY Albany, and NewVectors, and it is sponsored by the Department of Defense. The objectives are to

generate alerts to analysts when evidence makes terrorist situations sufficiently likely.

Responsibility:

1. Determining the requirements for the BALER reasoning engine, which will combine a subset of first-order logic with Bayesian reasoning.
2. Designing a repository of Bayesian network fragments and logic statements.
3. Designing service interfaces and integrating components from the other participants.

Research Assistant, University of South Carolina, **Magellan Project** (August 2004 – May 2006)

Project Overview:

This is a joint research project with Georgia Tech Research Institute (GTRI), sponsored by ARDA in its Novel Intelligence from Massive Data (NIMD) Program. The objectives are to apply case-based and Bayesian reasoning for knowledge discovery and threat situation analysis.

Responsibility:

1. Designed the system ontology, which defines terms of a domain and terms used in searching for evidence in that domain using the Case-Based Reasoning for Knowledge Discover system from GTRI.
2. Designed and implemented algorithm for converting ACH (analysis of competing hypotheses) representation to Bayesian networks.
3. Designed and implemented the GUI and controller to link the reasoning system, knowledge discovery system, and hypothesis-analyzing system.
4. Collaboratively designed Bayesian network scenarios and reasoning algorithms.
5. Combined ontological reasoning with Bayesian networks to manage and capture knowledge from massive information to guide an analyst's knowledge discovery process.

Research Assistant, University of South Carolina, **OmniSeer Project** (December 2002 – August 2004)

Project Overview:

This was a joint research project with Global InfoTek, sponsored by ARDA. The objectives were to develop a cognitive framework that uses prior and tacit knowledge (PTK) and collaborative knowledge services to help analysts in extracting hidden information from voluminous data.

Responsibility:

1. Designed the system ontology.
2. Collaboratively designed algorithms for reasoning automation and the Bayesian fragments needed for ontological reasoning.
3. Implemented the PTK system as a set of cooperating software agents.
4. Designed and implemented the algorithm for evaluating the PTK system.

PUBLICATIONS

Books

J. Huang, R. Kowalczyk, Z. Maamar, D. Martin, I. Müller, S. Stoutenburg, and K.P. Sycara, editors, *Service-Oriented Computing: Agents, Semantics, and Engineering*, Springer-Verlag, vol. LNCS 4504, Berlin, 2007.

Journal Papers

J. Huang, J. Dang, and M.N. Huhns, "Ontology Alignment as a Basis for Mobile Service Integration and Invocation," (in press) *International Journal of Pervasive Computing and Communications* (**acceptance rate < 17%**).

J. Huang, J. Dang, and M.N. Huhns, "Ontology Mutual Understanding via Matching Algorithms and Compatibility Vectors," (under review) *IEEE Transactions on Knowledge and Data Engineering (TKDE).*

J. Huang and W.J. Zheng, "Use Artificial Neural Network to Align Biological Ontologies," (in preparation) *Bioinformatics Journal*.

Book Chapters

J. Huang, J. Dang, and M.N. Huhns, "Ontology-Based Partner Selection in Business Interaction," (in press) *Handbook of Ontologies for Business Interaction*. Peter Rittgen, editor, Idea Group Inc., Hershey, PA, Chapter 21, 2007.

J. Huang, R. Zavala, B. Mendoza, and M.N. Huhns, "Reconciling Agent Ontologies for Web Service Applications," *Multiagent System Technologies: Third German Conference (MATES-05).* Torsten Eymann, Franziska Klügl, Winfried Lamersdorf, Matthias Klusch, and Michael N. Huhns, editors, Springer Verlag, Vol. LNAI 3550, Berlin, 2005, pp. 106 – 117.

Conference and Workshop Papers

J. Huang, J. Dang, and M.N. Huhns, "Ontology Reconciliation for Service-Oriented Computing," *Proc. 2006 IEEE International Conference on Services Computing* (*SCC-06*), Chicago, IL, September 2006 (**Runner-up for Best Student Paper Award**).

J. Dang, **J. Huang**, and M.N. Huhns, "Workflow Coordination for Service-Oriented Multiagent Systems," *Proc. 6th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-07)*, Honolulu, Hawaii, May 2007.

J. Huang, J. Dang, J.M. Vidal, and M.N. Huhns, "Ontology Matching Using an Artificial Neural Network to Learn Weights," *Proc. IJCAI Workshop on Semantic Web for Collaborative Knowledge Acquisition* (*SWeCKa-07*), Hyderabad, India, January 2007.

J. Huang and M.N. Huhns, "Superconcept Formation System–An Ontology Matching Algorithm for Web Applications," *Supplemental Proc. 5th International Semantic Web Conference* (*ISWC-06*), Athens, GA, November 2006.

J. Huang and M.N. Huhns, "An Ontology Matching Algorithm for Service Discovery," *Proc. Service Discovery on the WWW Workshop* at *1st Asian Semantic Web Conference* (*ASWC-06*), Beijing, China, September 2006.

J. Huang, J. Dang, and M.N. Huhns, "Reconciling Ontologies for Coordination among E-business Agents," *Proc. AAMAS Workshop on Business Agents and the Semantic Web (BASeWEB-06*), Hakodate, Japan, May 2006.

J. Huang, J. Dang, and M.N. Huhns, "Ontology Reconciliation in E-business Domain," presented in *International Student Workshop on Agents* (*ISWA-06*), Kyoto, Japan, May 2006.

J. Huang, R. Zavala, B. Mendoza, and M.N. Huhns, "A Schema-based Approach Combined with Inter-Ontology Reasoning to Construct Consensus Ontologies," *Proc. AAAI Workshop on Contexts and Ontologies (C&O-05)*, Pittsburgh, PA, July 2005, pp. 80 – 87.

J. Huang, R. Zavala, B. Mendoza, and M.N. Huhns, "Sharing Ontology Schema Information for Web Service Integration," *Proc. 5th International Conference on Computer and Information Technology (CIT-05)*, Shanghai, China, September 2005, pp. 1056 – 1062.

M.G. Valtorta, **J. Huang**, et al., "Extending Heuer's Analysis of Competing Hypotheses Method to Support Complex Decision Analysis," *Proc. 2005 International Conference on Intelligence Analysis Methods and Tools (IA-05)*, Washington D.C., May 2005.

J. Cheng, **J. Huang**, et al., "OmniSeer: A Cognitive Framework for User Modeling, Reuse of Prior and Tacit Knowledge, and Collaborative Knowledge Services," *Proc. 38th Annual Hawaii International Conference on System Sciences (HICSS-38) - Track 9*, Big Island, Hawaii, January 2005.

S. Xu, **J. Huang**, et al., "Security Issues in Privacy and Key Management Protocols of 802.16," *Proc. The Workshop of 2005 International Conference on Computational Intelligence and Security (CIS-05)*, Xi'an, China, October 2005.

Technical Reports

M.G. Valtorta, **J. Huang**, et al., "Tutorial and Training Manual for the Prior and Tacit Knowledge System of OmniSeer," December 2003.

J. Cheng, **J. Huang**, et al., "OmniSeer Project Final Report," August 2004.

GUEST LECTURES

1. Guest instructor in *CSC 434: Database Management*, at *Benedict College*, Columbia, SC, Spring 2007.
2. "Simplification and K-maps," in *CSCE 211: Digital Logic Design*, at *University of South Carolina*, September 2006.

3. "Extending Heuer's Analysis of Competing Hypotheses Method to Support Complex Decision Analysis," in *CSCE 798: Multiagent Systems Reading Group*, at *University of South Carolina*, March 2005.
4. "Matching Techniques for Resource Discovery in Distributed Systems Using Heterogeneous Ontology Descriptions," in *CSCE 798: Bayesian Network Reading Group*, at *University of South Carolina*, February 2005.
5. "Analysis of Competing Hypotheses," in *CSCE 798: Bayesian Network Reading Group*, at *University of South Carolina*, February 2005.

INVITED TALKS AND PRESENTATIONS

1. "Ontology Matching Algorithms," invited talk at *Oak Ridge National Lab*, January 2007.
2. "Inferring, Validating, and Coordinating the Commitments in a Workflow," presented at *2006 IEEE International Conference on Web Services (ICWS-06)*, Chicago, IL, September 2006.
3. "A Framework for Intelligent Web Services: Combined HTN and CSP Approach," presented at *2006 IEEE International Conference on Web Services (ICWS-06)*, Chicago, IL, September 2006.
4. "Understanding Ontologies for Web Service Coordination," in *University of South Carolina Graduate Student Day*, March 2006.

HONORS AND AWARDS

Runner-up for Best Student Paper Award at 2006 IEEE International Conference on Services Computing (SCC-06) 2006
AAAI Scholarship 2006
USC Graduate School Dean's Student Travel Award 2006
AAAI Scholarship 2005
USC Graduate School Dean's Student Travel Award 2005
Fuzhou University Excellent Student Scholarship 1997 – 2000

PROFESSIONAL SERVICES

Workshop Co-Chair

1. AAMAS Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering (SOCASE-07)

Session Chair

1. 2006 IEEE International Conference on Services Computing (SCC-06)

Journal Review Board Member

1. Journal of Open Research on Information Systems

Program Committee Member

1. 6th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-07)
2. 2007 IEEE International Conference on Computer and Information Technology (CIT-07)
3. 4th International Conference on Grid Service Engineering and Management (GSEM-07)
4. 3rd International Workshop on Agents and Web Services in Distributed Environments (AWeSOMe-07)
5. 1st IEEE International Conference on Engineering of Intelligent Systems (ICEIS-06)
6. 2nd International Workshop on Agents, Web Services, and Ontologies (AWeSOMe-06)
7. International Workshop on Ontology Matching (OM-06)

Technical Paper Reviewer

1. IEEE Internet Computing
2. World Wide Web Journal (WWWJ)
3. IEEE Transactions on Knowledge and Data Engineering (TKDE)
4. International Journal of Cooperative Information Systems (IJCIS)
5. Journal of Zhejiang University SCIENCE A (Applied Physics and Engineering)
6. Knowledge Engineering Review Journal (KER)
7. Handbook of Ontologies for Business Interaction
8. 15th International Conference on Cooperative Information Systems (CoopIS-07)
9. 2006 IEEE International Conference on Services Computing (SCC-06)
10. 2006 IEEE International Conference on Computer and Information Technology (CIT-06)
11. 13th International Conference on Cooperative Information Systems (CoopIS-05)
12. 1st Intl. WS on Service-Oriented Application, Integration, and Collaboration (SOAIC-05)
13. 2006 Canadian Semantic Web Working Symposium

IT Consultant

1. HS Coding Services Project (Joint project by Software School of Fudan University and Shanghai International Airport Entry-Exit Inspection & Quarantine Bureau)

AFFILIATIONS

Full Member, Sigma Xi, the Scientific Research Society

Member, Institute of Electrical and Electronic Engineers (IEEE)

Member, IEEE Services Computing Community

Member, American Association for Artificial Intelligence (AAAI)

Member, Society for Industrial and Applied Mathematics (SIAM)

TECHNICAL PROFICIENCIES

Programming Languages
Java, Prolog, SQL, C, C++, Visual Basic, PowerBuilder

Database Management Systems
MS SQL Server, Oracle, Informix, Sybase, MS Access

Web Languages and Protocols
XML, RDF/RDFS, OWL/OWL-S, BPEL4WS, UDDI, WSDL, SOAP

Tools
Protégé, Hugin, NetLogo, JADE

Operating Systems
Windows, UNIX

HOBBIES

Soccer – play pick-up games twice a week

Weight-lifting – have regular training several times per week

Driving – for sightseeing and faculty-student road-trips to conferences and PI meetings

Poker – one of the best at USC for a Chinese game "80 grade"

Music – mostly popular music, but sometimes pretend to enjoy classical music

REFERENCES

Dr. Michael N. Huhns (Ph.D. dissertation advisor)
NCR Professor; Director, Center for Information Technology
Computer Science and Engineering Department, University of South Carolina
Columbia, SC 29208
Phone: (803) 777-5921, email: huhns@sc.edu

Dr. Duncan A. Buell
Professor and Chair
Computer Science and Engineering Department, University of South Carolina
Columbia, SC 29208
Phone: (803) 777-2880, email: buell@sc.edu

Dr. Marco G. Valtorta (Ph.D. dissertation committee member, research project PI)
Associate Professor
Computer Science and Engineering Department, University of South Carolina
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Phone: (803) 777-4641, email: mgv@cse.sc.edu