

# Xiaoming Zheng

## Curriculum Vitae

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Computer Science Department, University of Southern California (USC)  
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### CURRENT POSITION

**Graduate Research Assistant**, Computer Science Department, Viterbi School of Engineering, University of Southern California

### RESEARCH INTERESTS

Distributed Computing Systems, Intelligent Decision Making Systems, Task Allocation and Scheduling, Operations Research and Optimization.

### EDUCATION

- University of Southern California**, Computer Science Department, Los Angeles (California) 2004 -  
Doctor of Philosophy (in progress) in Computer Science, Thesis Topic: "*Market-Based Algorithms for Task Allocation to Cooperative Agents*"  
Advisor: Prof. Sven Koenig
- University of Southern California**, Economics Department, Los Angeles (California) 2006 - 2009  
Master of Art in Economics, 2009  
Advisor: Prof. Juan D. Carrillo
- University of Southern California**, Computer Science Department, Los Angeles (California) 2004 - 2007  
Master of Science in Computer Science, 2007  
Advisor: Prof. Sven Koenig
- University of Science and Technology of China**, Computer Science Department, Hefei (China) 1999 - 2004  
Bachelor of Technology in Computer Science, 2004, Thesis Topic: "*Commitment-Based Agent in Distributed Computing Environment*"  
Advisor: Prof. Xiaoping Chen

### RESEARCH EXPERIENCE

- 2004 - **University of Southern California**, Computer Science Department (California)  
Graduate Research Assistant with Prof. Sven Koenig in the Intelligent Decision Making Laboratory (IDM-Lab)
- *We are developing market-based algorithms for automated task allocation and scheduling to GIS-based distributed intelligent systems that have to cooperate in large, nondeterministic, or only partial known domains, for example, multiple vehicle routing with dynamic geographical information for an intelligent transportation system, and efficient and effective coordination between heterogeneous organizations, such as fire engines, ambulances and polices, for the disaster rescue after unexpected events, such as earthquakes and terrorist attacks, happen in a city. The simulation platform of this project is developed in C/C++.*
- 2007 - **University of Southern California**, Economics Department (California)  
Direct Research with Prof. Juan D. Carrillo in the Theoretical Research of Neuroeconomic Decision Making Laboratory (TREND-Lab)
- *We are developing a platform-independent and user-friendly software system for conducting economics and other social science experiments, for example, to deal with multi-player multi-stage games in which the outcome of each stage is determined by all players' actions or random events. The system is based on standard client-server architecture, with both the client GUI and server logic being developed in Java. One example application of this system for the multi-player sequential rationality game can be obtained at: <http://www-scf.usc.edu/~xiaominz/multistage.rar>*

- Summer 2007 **AT&T Shannon Labs Research**, Applied Data Mining Department (New Jersey)  
 Research Intern with Dr. Ali Bastani and Dr. Phyllis Weiss for AT&T Western Region Project
- *We developed data mining and pattern recognition models and algorithms for early warning analysis of customer movement or churn in Western Region. These models and algorithms were designed to automatically process the applicable daily data extracted from the AT&T customer database systems and then to detect and alert high churn conditions on a market segment basis, for example, by geographical zones.*
- 2002 - 2004 **University of Science and Technology of China**, Computer Science Department (China)  
 Undergraduate Research Assistant with Prof. Xiaoping Chen in the Multi-Agent Systems Laboratory
- *We proposed the concept of Commitment-Based Agent and developed the operational specifications for it, which treated the speech acts and regular actions of agents in a unified fashion.*
- 2003 - 2004 **University of Science and Technology of China**, School of Software Engineering (China)  
 Research Intern with Prof. Yu Zhang in the Global Computing Laboratory
- *We developed a new kind of web Form structure TeleForm, which was based on W3C XForms, to meet the need of automatic process of telecom services in Anhui (China) province.*

## RELEVANT COURSEWORK

### Graduate Level Courses in Computer Science

- 2007 Modern Cryptography, Advanced Operating Systems  
 2006 Robotics, Machine Learning  
 2005 Software Architecture, Advanced Database Systems, Software Multi-agent Systems  
 2004 Analysis of Algorithm, Advanced Artificial Intelligence

### Graduate Level Courses in Economics and Mathematics

- 2008 Econometric Methods, Microeconomic Analysis and Policy  
 2007 Probability and Statistics, Macroeconomic Theory I  
 2006 Microeconomic Theory I, Microeconomic Theory II  
 2005 Game Theory

## SELECTED AWARDS

- 2008 AAMAS 2008 Conference Travel Grant (University of Southern California)  
 2007 IJCAI 2007 Conference Travel Grant (University of Southern California)  
 2003 Paper Award in Huawei-Cup Scientific Paper Contests (University of Science and Technology of China, Huawei Information Technology Institute)  
 Fall 2003 Excellent Undergraduate Research Award, on Project "Key problems in Agent-Based Computing" (University of Science and Technology of China)  
 Spring 2003 Excellent Undergraduate Research Award, on Project "Deliberative Adaptation" (University of Science and Technology of China)  
 2001-2003 Outstanding Student Award for 3 years in a row (University of Science and Technology of China)  
 2000 Freshman Scholarship (University of Science and Technology of China)  
 1998 National Award in China Olympiad Contest in Physics (China)

## TEACHING EXPERIENCE

- Spring 2009 Teaching Assistant of Prof. Ming-Deh Huang for the graduate level course "Modern Cryptography"  
 Fall 2008 Teaching Assistant of Prof. Shahriar Shamsian for the graduate level course "Analysis of Algorithms"  
 Fall 2003 Organizer of the seminar course "Reason about Action and Change"(with Xiaoping Chen, Yi Zhu)  
 Lecturer for the section "Least Commitment Planning" (two weeks)  
 Spring 2003 Organizer of the seminar course "BDI-modeling Theory for Intelligent Agent" (with Xiaoping Chen, Yi Zhu)  
 Lecturer for the section "Intention Theory and Its Formalization" (four weeks)

## **OTHER EXPERIENCE**

- 2008 - President of Chinese Student and Scholar Association in Southwest of America (SW CSSA)  
2007 - President of Chinese Student and Scholar Association in University of Southern California (USC CSSA)  
2006 - 2007 Maintainer of the ICAPS conference repository ([www.icaps-conference.org](http://www.icaps-conference.org))  
2000 - 2001 Head of Advertisement Department, Student Association in University of Science and Technology of China  
2001 Member of Organizing Committee for "Lenovo-Cup Software Development National-wide Invitation Competition"

## **COMPUTER SKILLS**

### **Programming Languages and Tools**

Java, C/C++, XML, KML, Spatial SQL, NetBeans IDE, .NET, SOAP, REST

### **Operating Systems**

UNIX, Linux, MS Windows, MS-DOS

## **LANGUAGE**

Fluent in English, Mandarin Chinese (native)

## **NATIONALITY AND VISA STATUS**

P. R. CHINA. Currently on F-1 Student VISA

## **MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

American Association for Artificial Intelligence (AAAI)  
Institute of Electrical and Electronics Engineers (IEEE)

## **PUBLICATIONS**

### **Journal Papers**

Xiaoming Zheng, Sven Koenig, David Kempe and Sonal Jain. Multi-Robot Coverage of Weighted and Unweighted Terrain. *IEEE TRANSACTIONS ON ROBOTICS* (submitted), 2008.

### **Conference Papers**

Xiaoming Zheng and Sven Koenig. Negotiation with Reaction Functions for Solving Complex Task Allocation Problems. Submitted to *the IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2009.

Xiaoming Zheng and Sven Koenig. K-Swaps: Cooperative Negotiation for Solving Task-Allocation Problems. Submitted to *the International Joint Conference on Artificial Intelligence (IJCAI)*, 2009.

Xiaoming Zheng and Sven Koenig. Solving Task-Allocation Problems with Coalitions. Submitted to *2009 Robotics: Science and Systems Conference (RSS)*, 2009.

Xiaoming Zheng and Sven Koenig. Greedy Approaches for Solving Task-Allocation Problems with Coalitions. In *Proceedings of the AAMAS-08 Workshop on Formal Models and Methods for Multi-Robot Systems*, pages 35-40, 2008 (ORAL PRESENTATION).

Sven Koenig, Xiaoming Zheng, Craig Tovey, Richard Borie, Philip Kilby, Vangelis Markakis and Pinar Keskinocak. Agent Coordination with Regret Clearing. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, pages 101-107, 2008 (ORAL PRESENTATION).

Xiaoming Zheng and Sven Koenig. Reaction Functions for Task Allocation to Cooperative Agents. In *Proceedings of the International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, pages 559-566, 2008 (ORAL PRESENTATION).

Xiaoming Zheng and Sven Koenig. Robot Coverage of Terrain with Non-Uniform Traversability. In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 3757-3764, 2007 (ORAL PRESENTATION).

Sven Koenig, Craig Tovey, Xiaoming Zheng and Ilgaz Sungur. Sequential Bundle-Bid Single-Sale Auction Algorithms for Decentralized Control, In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, pages 1359-1365, 2007 (ORAL PRESENTATION).

Xiaoming Zheng, Sven Koenig and Craig Tovey. Improving Sequential Single-Item Auctions, In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 2238-2244, 2006 (ORAL PRESENTATION). Also in: *Proceedings of the AAAI 2006 Workshop on Auction Mechanisms for Robot Coordination* (ORAL PRESENTATION).

Xiaoming Zheng, Sonal Jain, Sven Koenig and David Kempe. Forest-Based Multirobot Coverage, In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems(IROS)*, pages 2318-2323, 2005 (ORAL PRESENTATION).

Xiaoming Zheng. An Abstract of Software System: Commitment-Based System, In *Proceedings of the China National Software and Application Conference (NSAC)*, 2003 (ORAL PRESENTATION).

Xiaoming Zheng and Xiaoping Chen, An Analysis of Commitment in Agent-Based Computing, In *Proceedings of the 10<sup>th</sup> China National Conference on Artificial Intelligence (CAAI)*, 2003 (ORAL PRESENTATION).

## **REFERENCES**

Available upon Request