

Tao Jiang

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Institute for Systems Research
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RESEARCH INTERESTS

- ◆ Control and management of autonomic networks, including peer-to-peer networks, sensor networks, and mobile ad hoc networks: network dynamics, network optimization, data aggregation
- ◆ Security in wireless networks: trust management, secure routing, privacy, implementation of secured wireless networks
- ◆ Dynamics of networks in multiple disciplines: complex networks, biological networks

EDUCATION

University of Maryland, College Park, 2001 ~ 2007

Ph.D. in Electrical and Computer Engineering
Advisor: Dr. John S. Baras (baras@isr.umd.edu), GPA: 3.94/4.0
Ph.D. thesis: Distributed Trust Management in Autonomic Networks
Major: Communication, Minor: Control, Computer Engineering

Tsinghua University, Beijing, P.R. China, 1997 ~ 2001

B.S. in Electronic Engineering, graduated with *highest distinction*
Advisor: Dr. Kun Tang, GPA: 90.1/100

EXPERIENCE

INSTITUTE FOR SYSTEMS RESEARCH, University of Maryland, College Park
Post-doc, 2007 ~ present

- Formation and structure optimization on networks of autonomous agents
- Trust and reputation management in social webs and autonomic networks
- Byzantine resistant attack detection in mobile ad hoc networks

INSTITUTE FOR SYSTEMS RESEARCH, University of Maryland, College Park
Graduate Research Assistant, 2001 ~ 2007

- ◆ Trust management in autonomic networks: to theoretically understand network dynamics in the application of trust management (Ph.D. thesis)
 - Theoretically studied trust evaluation algorithms using linear control, graph theory, Markov random field and statistical physics: convergence, stability, attack resistance, phase transition
 - Applied cooperative game theory in self-organizing networks with selfish nodes, and investigated mechanisms (trust and negotiation) that promote collaboration
 - Proposed a distributed algorithm for trust-aware network utility optimization
 - Designed a trust evidence distribution algorithm inspired from network coding
- ◆ Secure routing in wireless networks
- ◆ Dynamics of networks in multiple disciplines: small-world and scale-free networks, biological neuronal networks

SYSTEMS & NETWORKING RESEARCH GROUP, Microsoft Research, Redmond, WA
Summer Intern, June ~ August 2005, Mentor: Helen J. Wang (helenw@microsoft.com)

- ◆ Location privacy in wireless networks

University of Maryland, College Park
Teaching Assistant, September ~ December 2004

- ◆ Engineering Probability in ECE department (lectures, recitations and office hours)

STATE KEY LAB ON DIGITAL COMMUNICATIONS, Tsinghua University, Beijing, China
Research Assistant, September 2000 ~ June 2001

- ◆ Speech coding in communication channels: vector quantization algorithms using simulated annealing

CENTER OF DISASTER REDUCTION, Chinese Academy of Science, Beijing, China
Research Assistant, May 2000 ~ December 2000

- ◆ Data mining on national precipitation information as part of the Synthetic Information System for Disaster Reduction

PUBLICATIONS

- ◆ Tao Jiang, Punyaslok Purkaystha and John S. Baras, "Constrained Coalitional Games and Networks of Autonomous Agents", in *Proceedings of Third International Symposium on Communications, Control and Signal Processing*, March 2008, Malta, Italy.
- ◆ Tao Jiang and John S. Baras, "Trust Document Distribution", in *Proceedings of MILCOM*, October 2007, Orlando, FL.
- ◆ Tao Jiang, Helen J. Wang, and Yih-Chun Hu, "Location Privacy in Wireless Networks", in *Proceedings of MobiSys*, Puerto Rico, June, 2007
- ◆ Tao Jiang and John S. Baras, "Fundamental Tradeoffs and Constrained Coalitional Games in Autonomic Wireless Networks", in *Proceedings of 5th Intl. Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, April 16-20, 2007, Limassol, Cyprus.
- ◆ Tao Jiang, George Theodorakopoulos, and John S. Baras, "Coalition Formation in MANETs", in *Proceedings of 25th Army Science Conference*, Orlando, FL, 2006
- ◆ Tao Jiang and John S. Baras, "Trust Evaluation in Anarchy: A Case Study on Autonomous Networks", in *Proceedings of Infocom*, April 2006, Barcelona, Spain
- ◆ Tao Jiang, Peng Xu, Pamela A. Abshire, and John S. Baras, "Solving Optimal Neural Layout by Gibbs Sampling", in *Proceedings of 7th Computational Intelligence and Natural Computing (CINC)*, July 2005, Salt Lake City, UT
- ◆ John S. Baras and Tao Jiang, "Cooperation, Trust and Games in Wireless Networks", book chapter in *Advances in Control, Communication Networks, and Transportation Systems: In Honor of Pravin Varaiya*, E.H. Abed (Ed.), Systems and Control: Foundations and Applications Series, Birkhauser, Boston, 2005
- ◆ Tao Jiang and John S. Baras, "Autonomous Trust Establishment", in *Proceedings of 2nd International Network Optimization Conference*, April 2005, Lisbon, Portugal
- ◆ Zhongchao Yu, Chuk-Yang Seng, Tao Jiang, Xue Wu, and William A. Arbaugh, "Robust Routing in Malicious Environment for Ad Hoc Networks", in *Proceedings of the First Information Security Practice and Experience Conference (ISPEC)*, April 2005.

- ◆ John S. Baras and Tao Jiang, "Cooperative Games, Phase Transition on Graphs and Distributed Trust in MANET", invited paper, in *Proceedings of 43rd IEEE Conference on Decision and Control* (CDC), December 2004, Atlantis, Bahamas
- ◆ John S. Baras and Tao Jiang, "Dynamic and Distributed Trust For Mobile Ad-hoc Networks", in *Proceedings of 24th Army Science Conference*, December 2004, Orlando, FL
- ◆ Tao Jiang and John S. Baras, "Ant-based Adaptive Trust Evidence Distribution in MANET", in *Proceedings of the 2nd International Workshop on Mobile Distributed Computing* (MDC), March 2004, Tokyo, Japan

INVITED TALKS AND POSTERS

- ◆ Poster on "Cooperation in Ad hoc Communication Networks: A Cooperative Game Approach", MSRI Workshop: Mathematics of Relaying and Cooperation in Communication Networks, April 2006, Berkeley, CA
- ◆ Poster and demo on "Distributed Trust Management in MANETs" in Collaborative Technology Alliance Conference (CTAC), June 2005, Arlington, VA
- ◆ Talk on "Managing Trust in Self-organized Mobile Ad Hoc Networks" in the 12th Annual Network and Distributed System Security Symposium (NDSS) workshop, February 2005, San Diego
- ◆ Talk on "Trust Establishment and Cooperation in MANETs" in ECEGSA Seminar, University of Maryland, College Park, November 2004
- ◆ Poster on "Dynamic and Distributed Trust Establishment in MANET" with Gorgeous Theodorakopoulos and John S. Baras, in IAB meeting, CSHCN, University of Maryland, College Park, October 2004 (**Best Poster** Award)
- ◆ Poster and demo on "Trust Evidence Distribution in Ad Hoc Networks" in Collaborative Technology Alliance Conference (CTAC), May 2003 (**Best Presentation** Award)
- ◆ Poster on "Risk Based Probabilistic Routing for Ad-Hoc Networks" with Zhongchao Yu, Xue Wu and William A. Arbaugh, in the 1st ACM Workshop on Wireless Security (WiSe), September 2002, Atlanta, GA

AWARDS AND HONORS

May 2003	Best presentation award presented by Dr. Michael Andrews, the Department of the Army's Chief Scientist
2001~2003	Graduate fellowship , University of Maryland
July 2001	Distinguished graduate of Beijing and Tsinghua University (Top honor)
1997~2001	First-class academic scholarship, Tsinghua University (Highest honor in 4 consecutive years)