

CURRICULUM VITAE

Xinwen Fu

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RESEARCH INTERESTS

Network Security and Privacy, Digital Forensics, Mobile and Wireless Networks, Distributed Systems

EDUCATION

- Ph.D. in Computer Engineering, December 2005, Texas A&M University, U.S.A.
Dissertation: On Traffic Analysis Attacks and Countermeasures
Advisor: Dr. Wei Zhao
- M.S. in Electrical Engineering, December 1998, Graduate School of University of Science and Technology of China, China
Thesis: Texture Classification Based on Feature Symbol Random Field
- B.S. in Electrical Engineering, July 1995, Xi'an Jiaotong University, China
Thesis: NOVELL Network and Network Database Management of the 2nd Workshop of Xi'an Switch Factory

WORKING EXPERIENCE

7/2/09-8/27/09 Senior Research Fellow, Department of Computer Science, City University of Hong Kong
8/08-Present Assistant Professor, Department of Computer Science, University of Massachusetts Lowell

- Refer to publications and grants for research projects
- Spring 2011:
991.661.201 Advanced Topics in Network Security
91.204.201 Computing IV
94.562.031 Digital Forensics (On-line course)
- Fall 2010:
91.204.201 Computing IV
- Spring 2010:
91.561.201 Computer & Network Security I
- Fall 2009:
991.661.201 Advanced Topics in Network Security
91.204.201 Computing IV
- Spring 2009:
91.561.201 Computer & Network Security I
- Fall 2008:
91.580.203 Topics in Computer Science: Computer and Network Forensics

7/30/08-8/30/08 Senior Research Fellow, Department of Computer Science, City University of Hong Kong
8/05-7/08 Assistant Professor, College of Business and Information Systems, Dakota State University

- Refer to publications and grants for research projects
- Spring 2008:
 - INFA-721 Computer Forensics
 - CIS-418 Advanced Computer Forensics
 - INFA-717 Advanced Network Security (independent study)
 - INFA-751 Introduction Wireless Security (independent study)
- Fall/2007 teaching:
 - INFA-719 Software Security
 - INFA-753 Bldg & Secur Wireless Networks (Independent Study)
 - CSC-409 System & Security Programming
- Spring/2007 teaching:
 - INFA-721 Computer Forensics, Student Evaluation: 4.3/5.0
 - CIS-418 Network Intrusion Detection Systems, Student Evaluation: 4.3/5.0
- Fall/2006 teaching:
 - INFA-719 Software Security, Student Evaluation: 4.8/5.0
 - CIS-414-D02 Computer Security Fundamentals, Student Evaluation: 3.5/5.0
- Spring/2006 teaching:
 - CIS-492 Computer Forensics, Student Evaluation: N/A
 - CIS-418 Network Intrusion Detection Systems, Student Evaluation: 3.8/5.0
- Fall/2005 teaching:
 - INFA-719 Software Security, Student Evaluation: Approximate 4.2/5.0
 - CIS-414-D02, Student Evaluation: Approximate 4.1/5.0
 - CIS-414-D03 Computer Security Fundamentals, Student Evaluation: Approximate 4.1/5.0

1/05-8/05 Research Assistant, Computer Science Department, Texas A&M University

- Researched information assurance of honeypots, in particular, virtual honeypots such as honeyd.
- Designed and implemented a new honeyd, which can hide itself from discovering by an adversary.

8/04-12/04 Teaching Assistant, Computer Science Department, Texas A&M University

- Instructed and tutored the lab of Introduction to Java Programming.

8/99-8/04 Research Assistant, Real-Time Communication Group, Department of Computer Science, Texas A&M University.

- Designed and programmed an anonymous communication system
- Designed and programmed a Linux PCMCIA driver in favor of user privacy.
- Designed and programmed a Linux security gateway, which does network traffic shaping by appropriate network traffic filtering and padding.
- Designed and implemented a network security protocol, which embeds one network traffic flow into other network traffic flows to achieve the objective of traffic pattern camouflaging.
- Implemented a Windows NT NDIS (kernel) network driver for network traffic rerouting and shaping for the DARPA sponsored project, NetCamo, which has been successfully deployed in the Naval Surface Warfare Center.

12/98-7/99 Software Engineer, Beijing Taitong Electronics Inc., Beijing, P.R.China.

- Was the key software engineer developing a large database application for the Department of Public Security of China.

9/97-12/97 Teaching Assistant, Department of Electrical Engineering, Graduate School of University of Science and Technology of China, Beijing, P.R.China.

- Instructed and tutored the lab of digital signal processing.

9/96-7/98 Research Assistant, Department of Electrical Engineering, Graduate School of University of Science and Technology of China, Beijing, P.R.China.

- Proposed and implemented feature-symbol-random-field based hierarchical schemes that lead to a high classification ratio for texture classification.
- Implemented the report form design subsystem of the welfare lottery management system on SYBASE for Civil Affairs Ministry of China.

MAJOR HONORS and AWARDS

- Teaching award (2010-2011), Department of Computer Science, UMass Lowell
- Best paper award, International Conference on Communications (ICC): Information and Network Security Symposium, 2008
- The Merrill Hunter Award for Excellence in Research, Dakota State University, 2008
- 1st place, Oral Competition in the Student Research Week, Texas A&M University, 2005
- Graduate Student Research Excellence Award, Department of Computer Science, Texas A&M University, 2004
- 2nd Place Graduate Winner, ACM International Student Research Contest, 2002
- Elite Scholarship, Chinese Academy of Sciences, 1996
- Excellent Student Scholarship, Xi'an Jiaotong University, 1991 - 1995

GRANTS

External Grants (\$1,330,419 as PI / \$2,377,214)

- Title: TC: Small: Collaborative Research: Membership Inference in a Differentially Private World and Beyond, **(PI)**, **Source: NSF**, Duration: 9/2011 - 8/2014, Amount: \$166,123 / \$495,254
- Title: II-New: A Network Forensics Lab for Integrated Research and Education at University of Massachusetts Lowell **(PI)**, **Source: NSF**, Duration: 3/2010 - 2/2013, Amount: \$500,278
- Title: Creating Learning Materials and Strategies for Network Forensics Education **(PI)**, **Source: NSF**, Duration: 8/2010 - 7/2012, Amount: \$188,314
- Title: Collaborative Research: EAGER: Novel Theoretical Foundation for Wireless Positioning in Challenging Environments **(PI)**, **Source: NSF**, Duration: 9/2009 - 7/2012, Amount: \$75,000 / \$150,000
- Title: Collaborative Research: WN: Proper Location Identification in Wireless Networks **(PI)**, **Source: NSF**, Duration: 9/2007 - 8/2010; REU Supplement Duration: 9/2009 - 8/2010, Amount: \$214,147 / \$636,811; REU Supplement Amount \$16,000
- Title: MRI: Acquisition of Equipment to Establish an Information Assurance Infrastructure for Research and Education at Dakota State University **(PI)**, **Source: NSF**, Duration: 8/2007 - 7/2010, Amount: \$120,557
- Title: Effectively and Efficiently Tracking Malicious Use of Anonymous Communication **(PI)**, **Source: South Dakota Governor Individual Research Seed Grant Program**, Duration: 9/2006 - 9/2007, Amount: \$50,000
- Title: South Dakota Health Information Security and Privacy Study (Senior Personnel), **Source: South Dakota Department of Health**, Duration: 6/2006 - 9/2007, Amount: \$220,000

Internal Grants

- Title: Center for Cyber Forensics, Source: University of Massachusetts Lowell, Duration: 9/2010 - present, Amount: \$31,000 plus tuition and fees
- Title: A New Replay Attack Against Anonymous Communication Networks, Source: Faculty Research Initiative Grant at Dakota State University, Duration: 10/2007 - 5/2008 Amount: \$1,000
- Title: Traffice Analysis Attacks and Countermeasures, Source: Proposal Initiative Award at Dakota State University, Duration: 3/2007 - 6/2007 Amount: \$500
- Title: Improving TCP Performance in Flow Based Anonymous Communication Networks, Source: Faculty Research Initiative Grant at Dakota State University, Duration: 3/2007 - 6/2007 Amount: \$500
- Title: Measuring and Improving Anonymous Network Performance, Source: Student Research Initiative Awards at Dakota State University, Duration: 10/2006 - 5/2007, Supervised Student: Jie Yu Amount: \$300
- Title: Faculty Research Initiative Grants - Camouflaging Virtual Honeypots (PI), Source: Dakota State University, Duration: 10/2005 - 5/2006 Amount: \$1,000
- Title: Political Data Mining and Voter Decision Support Systems: Implementation and Security Research, Source: Student Research Initiative Awards at Dakota State University, Duration: 10/2005 - 5/2006, Supervised Student: Ivan Ven Osdel Amount: \$500, 2006

STUDENTS

Current Students

4. Yinjie Chen, Ph.D, in progress
3. Zhongli Liu, Ph.D, in progress
2. Xian Pan, Ph.D, in progress
1. Junwei Huang, Ph.D, in progress

Graduated Students

10. Jonathan Labroad, Master, Committee Member (Advisor: Yan Luo), Performance analysis of reconfigurable logic accelerators in heterogeneous multi-core architectures, April 5, 2011, UMass Lowell
9. Williams Gauvin, Ph.D, Committee member (Advisor: Benyuan Liu), Protecting the privacy of on-line social network users, Feb 15 2011, UMass Lowell
8. Anwar Saipulla, Ph.D, Committee member (Advisor: Benyuan Liu), Barrier Coverage of Wireless Sensor Networks, April 2nd, 2010, UMass Lowell
7. Qiang Hou, Master, Committee member (Advisor: Jie Wang), A study on wireless mesh network security, November 30, 2009, UMass Lowell
6. Jie Yu, M.S., Project: Improving Anonymous Communication Network Performance (Advisor), May 2008, DSU
5. Ryan Pries, M.S., Projects: (1) A New Replayer Attack against Anonymous Communication Networks; (2) On Performance Bottleneck of Anonymous Communication Networks, May 2007 (Advisor), DSU
4. Mirza Javed, M.S., Project: Coaching Forms Application, August, 2007 (Committee member), DSU

3. Steve Williams, M.S., Project: Tuition Reduction Incentive Program Application (Compuscrip), Dec. 2006 (Committee member), DSU
2. Nathan Anderson, M.S., Project: Citrix Solution for The Great Plains Corporate Accounting System for US Bioenergy Coporation, Dec. 2006 (Committee member), DSU
1. Lawrence Lee, M.S., Project: Introution Detection Device E-learning, Apr. 2006 (Committee member), DSU

REFEREED PUBLICATIONS

Book

1. Xinwen Fu, Traffic Analysis Attacks and Countermeasures – Pattern Recognition Based Methodology, *VDM Publishing*, ISBN: 978-3-639-14777-3, 2009

Book Chapters

5. Xin Jin, Min Dan, Nan Zhang, Wei Yu, **Xinwen Fu**, and Sajal K. Das, “Game Theory for Infrastructure Security - The Power of Intent-Based Adversary Models”, Book Chapter in Handbook on Securing Cyber-physical Infrastructures: Foundations and Challenges (In press) September 2011.
4. Xinyu Yang, Jie Lin, Wei Yu, **Xinwen Fu**, Genshe Chen, and Erik P. Blasch, “On Situational Aware En-route Filtering against Injected False Data in Cyber Physical Networks,”. Book Chapter in Situational Awareness in Computer Network Defense: Principles, Methods and Applications, IGI-Global, USA (in press) September, 2011.
3. Wei Yu, Nan Zhang, **Xinwen Fu**, and Brian Rivera, “Evolution of Widely-Spreading Worms and Countermeasures: Epidemic Theory and Application,” Book Chapter in Handbook on Securing Cyber-physical Infrastructures: Foundations and Challenges (In press) September 2011.
2. Steven Graham, Bin Lu and **Xinwen Fu**, Network Security Fundamentals, *Encyclopedia of Computer Science and Engineering*, John Wiley & Sons, Inc., 2007 Accepted
1. **Xinwen Fu**, S. Graham, and Y. Guan, Location Privacy in Wireless Networks, *Handbook on Mobile Ad Hoc and Pervasive Communications*, American Scientific Publishers, 2006 Accepted

Refereed Journal Publications

18. **Xinwen Fu**, N. Zhang, A. Pingley, W. Yu, J. Wang and W. Zhao, The Digital Marauder’s Map: a WiFi Forensic Positioning Tool, *IEEE Transactions on Mobile Computing (TMC)*, 2011 Accepted
17. Xian Pan, Junwei Huang, Zhen Ling, Bin Lu, and **Xinwen Fu**, Long PN Code Based Traceback in Wireless Networks, *International Journal of Performability Engineering (IJPE)*, Accepted 2011
16. W. Yu, N. Zhang, **Xinwen Fu**, R. Bettati and W. Zhao, Localization Attacks to Internet Threat Monitors: Modeling and Countermeasures, *IEEE Transactions on Computers*, 59(12): 1655-1668, 2010
15. Ye Zhu, **Xinwen Fu**, Bryan Graham, Riccardo Bettati, Wei Zhao, Correlation-Based Traffic Analysis Attacks on Anonymity Networks, *IEEE Transactions on Parallel and Distributed Systems*, 21(7): 954-967, 2010
14. Yuefeng Huang, Xinyu Yang, Shuseng Yang, Wei Yu, and Xinwen Fu, A Cross Layer Approach Handling Link Asymmetry for Wireless Mesh Access Networks, *IEEE Transactions on Vehicular Technology (TVT)*, 2010, Accepted
13. Nan Zhang, Wei Yu, **Xinwen Fu**, Sajal K. Das, Maintaining the Defenders Reputation in Anomaly Detection Against Insider Attacks, *IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics (SMC-B)*, 40(3): 597-611, 2010

12. Wei Yu, Nan Zhang, **Xinwen Fu**, and Wei Zhao, Self-Disciplinary Worms and Countermeasures: Modeling and Analysis, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 21(10): 1501-1514, 2010
11. **Xinwen Fu**, Wei Yu, Shu Jiang, Steve Graham and Yong Guan, TCP Performance in Flow-Based Mix Networks: Modeling and Analysis, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 20(5): 695-709, 2009
10. Wei Yu, Xun Wang, **Xinwen Fu**, Dong Xuan, and Wei Zhao, An Invisible Localization Attack to Internet Threat Monitors, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 20(11): 1611-1625, 2009
9. **Xinwen Fu**, Wei Yu, Xukai Zou, Kevin Streff, and Steve Graham, On Recognizing Virtual Honeypots and Countermeasures, *Journal of Autonomic and Trusted Computing (JoATC)*, Accepted 2007
8. Y. Zhu, **Xinwen Fu**, and R. Bettati, On the Effectiveness of Continuous-Time Mixes under Flow-Correlation Based Anonymity Attacks, accepted by *International Journal of Network Security (IJNS)*, 7(1): 130-140, 2008
7. J. Lee, W. Yu and **Xinwen Fu**, Energy-Efficient Target Detection in Sensor Networks using Line Proxies, *International Journal of Communication Systems*, 21(3): 251-275, 2008
6. **Xinwen Fu**, Y. Zhu, B. Graham, R. Bettati, and Wei Zhao, On Flow Marking Attacks in Wireless Anonymous Communication Networks, *Journal of Ubiquitous Computing and Intelligence (JUCI)*, 1(1):42-53, April 2007
5. Y. Zhu, **Xinwen Fu**, R. Bettati, and W. Zhao, Analysis of Flow-Correlation Attacks in Anonymity Network, *Special Issue of International Journal of Security and Networks (IJSN)*, 2(1/2): 137-153, 2007
4. Y. Guan, **Xinwen Fu**, R. Bettati, and Wei Zhao, A Quantitative Analysis of Anonymous Communications, *IEEE Transactions on Reliability*, 53(1), Mar. 2004
3. **Xinwen Fu**, Y. Guan, R. Bettati, and Wei Zhao, Hiding Role Assignment for Mission Critical Collaborative Systems, *Quality and Reliability Engineering International, Special Issue on Computer Network Security*, 18(3), 2002
2. Y. Guan, **Xinwen Fu**, D. Xuan, Prashanth Shenoy, R. Bettati, and Wei Zhao, NetCamo: Camouflaging Network Traffic for QoS-Guaranteed Mission Critical Applications, in *IEEE Transactions on System, Man, and Cybernetics, Special Issue on Information Assurance*, 31(4), Jul. 2001
1. **Xinwen Fu**, M. Zhang, and X. Li, A Method of Texture Matching Based on Feature Symbol Random Field Created By Wavelet, *China Journal of Image and Graphics*, 4(3):243-247, Jun. 1999

Refereed Conference Publications

48. Junwei Huang, Xian Pan, **Xinwen Fu** and Jie Wang, Long PN Code Based DSSS Watermarking, in *Proceedings of Infocom*, 2011, Accept ratio: 15.96%
47. Yinjie Chen, Zhongli Liu, Benyuan Liu, **Xinwen Fu** and Wei Zhao, Identifying Mobiles Hiding behind Wireless Routers, in *Proceedings of Infocom*, 2011, Accept ratio: 15.96%
46. Aniket Pingley, Nan Zhang, **Xinwen Fu**, Hyeong-Ah Choi, Suresh Subramaniam, Wei Zhao, Protection of Query Privacy for Continuous Location Based Services, in *Proceedings of Infocom*, 2011, Accept ratio: 15.96%
45. Zhen Ling, **Xinwen Fu**, Weijia Jia, Wei Yu and Dong Xuan, A Novel Packet Size Based Covert Channel Attack against Anonymizer, in *Proceedings of Infocom Mini-Conference*, 2011, Accept ratio: 23.42%
44. Zhen Ling, Junzhou Luo, Wei Yu and **Xinwen Fu**, Equal-sized Cells Mean Equal-sized Packets in Tor?, in *Proceedings of ICC Communication and Information System Security Symposium*, Kyoto, Japan, June 5 - 9, 2011
43. Jie Lin, Xinyu Yang, Wei Yu and Xinwen Fu, Towards Effective En-route Filtering against Injected False Data in Wireless Sensor Networks, in *Proceedings of IEEE GLOBECOM - Communication & System Security*, 2011
42. William Gauvin, Cindy Chen, **Xinwen Fu**, Benyuan Liu, Classification of Commercial and Personal Profiles on MySpace, in *Proceedings of 3rd IEEE International Workshop on Security and Social Networking (SESOC)*, 2011

41. Yinjie Chen, Zhongli Liu, Yong Ding and Xinwen Fu, On Sampling Signal Strength for Localization Using a Directional Antenna, In Proceedings of IEEE International Workshop on Data Security and Privacy in wireless Networks (D-SPAN), June 20, 2011, Lucca, Italy
40. Nan Zhang, Wei Yu, **Xinwen Fu** and Sajal Das, gPath: A Game-Theoretic Path Selection Algorithm to Protect Tor's Anonymity, in Proceedings of Conference on Decision and Game Theory for Security (GameSec), 2010
39. Jizhi Wang, Yinjie Chen, **Xinwen Fu**, Jie Wang, W. Yu and N. Zhang, 3DLoc: Three Dimensional Wireless Localization Toolkit, In *Proceedings of the 30th IEEE International Conference on Distributed Computing Systems (ICDCS)*, 2010, Accept ratio 14.4%
38. Anwar Saipulla, Benyuan Liu, Guoliang Xing, **Xinwen Fu** and Jie Wang, Barrier Coverage with Sensors of Limited Mobility, in Proceedings of The 11th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), Chicago, USA, September 2010
37. **Xinwen Fu**, Zhen Ling, Wei Yu and Junzhou Luo, Cyber Crime Scene Investigations (C^2SI) through Cloud Computing, in *Proceedings of First ICDCS Workshop on Security and Privacy in Cloud Computing (ICDCS-SPCC)*, 2010
36. Zhongli Liu, Yinjie Chen, Wei Yu and **Xinwen Fu**, Generic Network Forensic Data Acquisition from Household and Small Business Wireless Routers, in *Proceedings of First International Workshop on Data Security and Privacy in wireless Networks (D-SPAN)*, 2010
35. X. Fan, X. Yang, W. Yu and **Xinwen Fu**, HLLS: A History information based Light Location Service for MANETs, in *Proceedings of IEEE International Conference on Communications (ICC)*, 2010
34. Z. Ling, J. Luo, W. Yu, **Xinwen Fu**, D. Xuan and W. Jia, A New Cell Counter Based Attack Against Tor, in *Proceedings of 16th ACM Conference on Computer and Communications Security (CCS)*, Chicago, Chicago, IL, 2009 Accept ratio 18.4%
33. **Xinwen Fu**, N. Zhang, A. Pingley, W. Yu, J. Wang and W. Zhao, The Digital Marauder's Map: A New Threat to Location Privacy in Wireless Networks, In *Proceedings of the 29th IEEE International Conference on Distributed Computing Systems (ICDCS)*, June 22-26, 2009 Montreal, Quebec, Canada Accept ratio 16.2%
32. A. Pingley, W. Yu, N. Zhang, **Xinwen Fu** and W. Zhao, CAP: A Context-Aware Privacy Protection System for Location-Based Services, In *Proceedings of the 29th IEEE International Conference on Distributed Computing Systems (ICDCS)*, June 22-26, 2009 Montreal, Quebec, Canada Accept ratio 16.2%
31. W. Jia, F. TSO, Z. Ling, **Xinwen Fu**, D. Xuan and W. Yu, Blind Detection of Spread Spectrum Flow Watermarks, In *Proceedings of The 28th Conference on Computer Communications (Infocom)*, Rio de Janeiro, Brazil, April 19-25, 2009, Accept ratio 19.6%
30. **Xinwen Fu** and Zhen Ling, One Cell is Enough to Break Tor's Anonymity, in Proceedings of Black Hat DC, February 18-19, 2009
29. Nan Zhang, Min Song, Xinwen Fu, and Wei Yu, Discovery and Protection of Sensitive Linkage Information for Online Social Networks Services, in *Proceedings of Workshop on Social Networks, Applications, and Systems (SNAS)*, 2009
28. William Gauvin, Benyuan Liu, Xinwen Fu, and Jie Wang, Utopia: Providing Trusted Social Network Relationships within an Un-Trusted Environment, in *Proceedings of Workshop on Social Networks, Applications, and Systems (SNAS)*, 2009
27. Ryan Pries, Wei Yu, Steve Graham, and **Xinwen Fu**, On Performance Bottleneck of Anonymous Communication Networks, In *Proceedings of the 22nd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Miami, Florida, April 14-18, 2008 Accept ratio 25%
26. X. Wang, W. Yu, **Xinwen Fu**, D. Xuan, and W. Zhao, iLOC: An invisible LOCALization Attack to Internet Threat Monitoring Systems, In *Proceedings of the 27th IEEE International Conference on Computer Communications (INFOCOM)*, Phoenix, AZ, April 13-28, 2008 Accept ratio 27%

25. W. Yu, N. Zhang, **Xinwen Fu**, R. Bettati, and W. Zhao, On Localization Attacks to Internet Threat Monitors: An Information-Theoretic Framework, In *Proceedings of the 38th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) - Performance and Dependability Symposium (PDS)*, June 24-27, 2008, Anchorage, Alaska, USA
24. Ryan Pries, W. Yu, **Xinwen Fu** and W. Zhao, A New Replay Attack Against Anonymous Communication Networks, In *Proceedings of the IEEE International Conference on Communications (ICC) - Information and Network Security Symposium*, Beijing, China, May 19-23, 2008 Accept ratio 36%
23. Nan Zhang, Wei Yu, **Xinwen Fu**, and Sajal K. Das, Towards Effective Defense Against Insider Attacks: The Establishment of Defenders Reputation, In *Proceedings of the 14th IEEE International Conference on Parallel and Distributed Systems (ICPADS)*, Melbourne, Victoria, Australia, 8th-10th December, 2008
22. W. Yu, **Xinwen Fu**, Steve Graham, D. Xuan and W. Zhao, DSSS-Based Flow Marking Technique for Invisible Traceback, In *Proceedings of IEEE Symposium on Security and Privacy (S&P)*, Oakland, California, USA, May 20-23, 2007 Accept ratio 8.3%
21. **Xinwen Fu**, Shu Jiang, Wei Yu, Steve Graham and Yong Guan, On TCP Performance in Flow-Based Mix Networks, The 3rd IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), Loyola College Graduate Center, Columbia, MD, USA 25-27, September, 2007
20. Xun Wang, Wei Yu, Adam Champion, **Xinwen Fu** and Dong Xuan, Detecting Worms via Mining Dynamic Program Execution, In *Proceedings of the 3rd International Conference on Security and Privacy in Communication Networks (SecureComm)*, September 17-20, 2007, Nice, France
19. **Xinwen Fu**, W. Yu, D. Cheng, X. Tan, K. Streff, and S. Graham, On Recognizing Virtual Honeypots and Countermeasures, In *Proceedings of the IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC)*, Sep. 29-Oct. 1, 2006
18. Kevin Streff, Anandthirath Rajagopalan, and **Xinwen Fu**, ABC: Adaptive Bank-Transaction Camouflaging Systems, in *Proceedings of the International Conference on i-Warfare and Security (ICIW)*, University of Maryland Eastern Shore, USA, March 15-16 2006
17. **Xinwen Fu**, Y. Zhu, B. Graham, R. Bettati, and Wei Zhao, On Flow Marking Attacks in Wireless Anonymous Communication Networks, in *Proceedings of the 25th International Conference on Distributed Computing Systems (ICDCS)*, June 2005, Accept ratio 14%
16. Y. Zhu, **Xinwen Fu**, R. Bettati, Wei Zhao, Anonymity Analysis of Mix Networks against Flow-Correlation Attacks, in *Proceedings of Globecom Computer & Network Security*, St. Louis, Nov. 25 - Dec 2, 2005, Accept ratio 30%
15. Y. Zhu, **Xinwen Fu**, and R. Bettati, On the Effectiveness of Continuous-Time Mixes under Flow-Correlation Based Anonymity Attacks, in *Proceedings of the 4th IEEE International Symposium on Network Computing and Applications (NCA)*, July, 2005, Accept ratio 30%
14. H. Xu, **Xinwen Fu**, Y. Zhu, R. Bettati, J. Chen, and Wei Zhao, SAS: A Scalar Anonymous Communication System, in *Proceedings of the International Conference on Computer Networks and Mobile Computing (ICCNMC)*, 2005, Accept ratio 25%
13. B. Graham, Y. Zhu, **Xinwen Fu**, R. Bettati, Using Covert Channels to Evaluate the Effectiveness of Flow Confidentiality Measures, in *Proceedings of the 11th International Conference on Parallel and Distributed Systems (ICPADS)*, July 20-22, Japan, 2005, Accept ratio 34%
12. **Xinwen Fu**, B. Graham, D. Xuan, R. Bettati and Wei Zhao, Empirical and Theoretical Evaluation of Active Probing Attacks and Their Countermeasures, in *Proceedings of the 6th Information Hiding Workshop (IHW)*, May 2004, Accept ratio 25%
11. Y. Zhu, **Xinwen Fu**, B. Graham, R. Bettati and Wei Zhao, On Flow Correlation Attacks and Countermeasures in Mix Networks, in *Proceedings of Workshop on Privacy Enhancing Technologies (PET)*, May 2004, Accept ratio 25%

10. **Xinwen Fu**, B. Graham, R. Bettati and Wei Zhao, On Effectiveness of Link Padding for Statistical Traffic Analysis Attacks, in *Proceedings of the 23rd International Conference on Distributed Computing Systems (ICDCS)*, May 2003, Accept ratio 17.7%
9. **Xinwen Fu**, B. Graham, D. Xuan, R. Bettati and Wei Zhao, Analytical and Empirical Analysis of Countermeasures to Traffic Analysis Attacks, in *Proceedings of the International Conference on Parallel Processing (ICPP)*, Oct. 2003, Accept ratio 35.9%
8. **Xinwen Fu**, B. Graham, R. Bettati and Wei Zhao, Active Traffic Analysis Attacks and Countermeasures, in *Proceedings of the International Conference on Computer Networks and Mobile Computing (ICCNMC)*, Oct. 2003
7. **Xinwen Fu**, B. Graham, R. Bettati and Wei Zhao, On Countermeasures to Traffic Analysis Attacks, in *Proceedings of the 4th IEEE SMC Information Assurance Workshop*, Jun. 2003
6. **Xinwen Fu**, B. Graham, Y. Guan, R. Bettati and Wei Zhao, NetCamo: Camouflaging Network Traffic for Real-Time Applications, in *Proceedings of Texas Workshop on Security of Information Systems*, Apr. 2003
5. Y. Guan, **Xinwen Fu**, R. Bettati, and Wei Zhao, An Optimal Strategy for Anonymous Communication Protocols, in *Proceedings of the 22nd IEEE International Conference on Distributed Computing Systems (ICDCS)*, Jul. 2002, Accept ratio 18.1%
4. **Xinwen Fu**, Y. Guan, B. Graham, R. Bettati and Wei Zhao, Using Parasite Flows to Camouflage Flow Traffic, in *Proceedings of the 3rd IEEE SMC Information Assurance Workshop*, United States Military Academy, Jun. 2002
3. Y. Guan, **Xinwen Fu**, R. Bettati, and Wei Zhao, Efficient Traffic Camouflaging in Mission Critical QoS-Guaranteed Networks, in *Proceedings of the 1st IEEE SMC Information Assurance Workshop*, Jun. 2000
2. X. Ma, **Xinwen Fu** and C. Hou, Texture Classification Based on Feature Symbol Random Field, in *Proceedings of the 4th International Conference on Signal Processing (ICSP)*, Oct. 1998
1. **Xinwen Fu**, M. Zhang, and X. Li, A Method of Texture Classification Based on Vector Quantization, in *Proceedings of the 9th Graphics and Image Technology Conference*, Aug. 1998

Magazine Publications

1. Aniket Pingley, Xian Pan, Nan Zhang, and Xinwen Fu, Bluetooth Mice Can Leak Your Passwords!, Hakin9, March Issue, 2011

Others

3. **Xinwen Fu**, Yong Guan and Wei Zhao, Forensic Analysis Techniques for Tracing Anonymous Cyber Criminals, Position Paper, ARO Workshop on Digital Forensics, Washington D.C, Sep. 10, 2009
2. Y. Guan, **X. Fu**, R. Bettati, and W. Zhao, Modeling and Optimizing Anonymous Communication Protocols, the 3rd Annual IEEE Information Assurance Workshop - Poster Session II, June 2002 West Point, New York
1. Y. Guan, **Xinwen Fu**, R. Bettati, and W. Zhao, A Quantitative Analysis of Anonymous Communications, the 10th USENIX Security Symposium - Works In Progress Session, Wahsington D.C., August 2001

CURRENT SYNERGISTIC ACTIVITIES

Presentations

27. CSI-WLAN: Wireless Network Crime Scene Investigation, IIT (Illinois Institute of Technology), April 29, 2011
26. Wireless Network Crime Scene Investigation, Southeast University, April 18, 2011
25. 3DLoc: Three Dimensional Wireless Localization Toolkit, The 30th International Conference on Distributed Computing Systems, June 22, 2010, Genoa, Italy,
24. 3DLoc: Three Dimensional Wireless Localization Toolkit for Network Forensics, computer Science & Engineering (CSE) Department, University of Connecticut, April 9, 2010
23. 3DLoc: Three Dimensional Wireless Localization Toolkit for Network Forensics, ECE Colloquia, University of Massachusetts Dartmouth, Mar. 26, 2010
22. 3DLoc: Three Dimensional Wireless Localization Toolkit for Network Forensics, George Washington University, Mar. 3, 2010
21. A New Cell Counter Based Attack Against Tor, ACM CCS, Nov. 12, 2009
20. A New Cell Counter Based Attack Against Tor, ECE Graduate Seminar Lecture Series, Worcester Polytechnic Institute (WPI), Nov. 6, 2009
19. The Digital Marauder's Map, Hacker Halted USA, Miami, FL, Sep. 24, 2009
18. Forensic Analysis Techniques for Tracing Anonymous Cyber Criminals, ARO Workshop on Digital Forensics, Washington D.C, Sep. 10, 2009
17. A New Cell Counter Based Attack against Tor (Are Equal-sized Cells Equal?), Department of Computing, Hong Kong Polytechnic University, Aug. 25, 2009
16. The Digital Marauder's Map, Department of Computer Science, Southeast University, China, Aug. 18, 2009
15. Blind Detection of Spread Spectrum Flow Watermarks, Infocom 2009, Rio de Janeiro, Brazil, Apr. 23, 2009
14. One Cell is Enough to Break Tor's Anonymity, George Mason University, Feb. 20, 2009
13. One Cell is Enough to Break Tor's Anonymity, Black Hat DC 2009, Feb. 19, 2009
12. A New Replay Attack Against Anonymous Communication Networks, ICC, May 21, 2008
11. Location Privacy in Wireless Networks, Faculty Development at Dakota State University, Oct. 26, 2007
10. On TCP Performance in Flow Based Anonymous Communication Networks, IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), 2007
9. DSSS-Based Flow Marking Technique for Invisible Traceback, IEEE Symposium on Security and Privacy (S&P), Oakland, California, USA, 2007
8. On Recognizing Virtual Honeypots and Countermeasures, IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), 2006
7. Camouflaging Virtual Honeypots, North Dakota State University, ND, Apr. 7, 2006
6. International Conference on i-Warfare and Security (ICIW), 2006
5. Faculty Research and Education Seminar Hour (FRESH), Dakota State University, February 15, 2006
4. International Conference on Distributed Computing Systems (ICDCS), 2005

3. SMC Information Assurance Workshop (IAW), 2003
2. SMC Information Assurance Workshop (IAW), 2002
1. ACM International Student Research Contest, 2002

Technical Program Committee & Others

46. Program Co-chair of Communications & System Security Symposium, IEEE Globecom 2011
45. TPC, IEEE International Conference on Computer Communications (Infocom), 2009, 2010, 2011, 2012
44. TPC, International Conference on Communications (ICC), 2008, 2009, 2010, 2011, 2012
43. Publication Chair, The Second Annual ACM Northeast Digital Forensics Exchange (NeFX), 2010
42. External Reviewer, Qatar National Research Fund (QNRF), 2011
41. External Reviewer, Research Grants Council (RGC) of Hong Kong, 2007, 2008, 2009, 2010, 2011
40. Program co-chair, the Sixth IEEE/IFIP International Symposium on Trusted Computing and Communications (Trust-Com), 2010
39. NSF panelist, 2006, 2010
38. Session chair, IEEE Infocom, 2009, 2010
37. TPC, International Conference on Parallel Processing (ICPP)
36. TPC, IEEE GlobeCom, 2008, 2009, 2010
35. TPC, The 3rd IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), 2007, 2009
34. TPC, Sixth IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), 2009
33. TPC, The International Conference on Wireless Algorithms, Systems, and Applications (WASA), 2006, 2009
32. TPC, International Conference on Network and System Security (NSS), 2008, 2009
31. TPC, The IEEE Wireless Communications and Networking Conference (WCNC), 2007, 2008, 2009
30. TPC, 28th IEEE International Conference on Distributed Computing Systems (ICDCS), 2008
29. TPC, 14th IEEE International Conference on Parallel and Distributed Systems (ICPADS), 2008
28. TPC, Int'l Conference on Communications and Networking in China (CHINACOM), 2008
27. TPC, First International Workshop on Security of Computer Communications and Networks (SoCCaN), 2008
26. TPC, International Wireless Communication and Mobile Computing Conference (IWCMC), 2006, 2007, 2008
25. TPC, International Conference on Autonomic and Trusted Computing (ATC), 2008
24. TPC, International Workshop on Forensics for Future Generation Communication environments (F2GC-07), 2007
23. TPC, Communication, Network, and Information Security (CNIS), 2007
22. TPC, International Conference on Intelligent Computing (ICIC), 2007
21. TPC, International Conference on Intelligent Computing

20. Session chair, The 3rd IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), 2007
19. International Conference on Embedded Software and Systems (ICCESS), 2007
18. Publicity Chair, International Conference on Autonomic and Trusted Computing (ATC), 2007
17. Program Vice-Chair, the IEEE International Symposium on Ubiquitous Computing and Intelligence, 2007
16. TPC, The International Wireless Communications and Mobile Computing Conference, 2007
15. Session Chair, the IEEE International Symposium on Dependable, Autonomic and Secure Computing (DASC), 2006
14. Editorial Board member of International Journal of Smart Home (IJSH)
13. Co-Publicity Chair, 1st International Workshop on Smart Home, 2006
12. Guest editor, Journal of Ubiquitous Computing and Intelligence (JUCI), Special issue: Advances in Ubiquitous Networking and Intelligent System, 2006
11. TPC, International Conference on i-Warfare and Security (ICIW), 2007
10. TPC, The IEEE International Symposium on Network Computing and Applications (NCA), Workshop on Trustworthy Network Computing, 2006
9. TPC, The International Conference on High Performance Computing and Communications (HPCC), 2006
8. TPC, International Conference on Parallel Processing (ICPP), 2006
7. Session chair, International Conference on i-Warfare and Security (ICIW), 2006
6. TPC, Pervasive Computing Applications & Security Service (PCASS06), 2006
5. TPC, The First International Workshop on Trustworthiness, Reliability and services in Ubiquitous and Sensor neTworks '06 (TRUST '06), 2006
4. Guest Editorial Board of Information Sciences (IS) Journal, Special Issue on Security Services and Applications in Intelligent Environments
3. TPC, International Conference on Computational Science and its Applications (ICCSA), Technical Session: Ubiquitous Application & Security Service (UASS), 2006
2. TPC, IEEE 20th International Conference on Advanced Information Networking and Applications (AINA), 2006
1. TPC, IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing, 2006

University Services

- Director, Center for Cyber Forensics at UMass Lowell, founded in Fall 2010
- University Senator Committee, Spring 2011
- CNIS seminar chair, Fall 2010 ~ Present
- Undergraduate Committee, Fall 2008 ~ Present
Present

Referee

Journals

15. IEEE Transactions on Wireless Communications (TWC)
14. IEEE Transactions on Parallel and Distributed Systems (TPDS)
13. Ad Hoc Networks, Elsevier
12. Security and Communication Networks, ScholarOne, Inc.
11. International Journal of Computers and Applications (ACTA), ACTA Press
10. Computer Networks, Elsevier
9. Handbook on Mobile Ad Hoc and Pervasive Communications
8. Journal of Ubiquitous Computing and Intelligence
7. International Journal of Wireless and Mobile Computing
6. IEEE Communications Magazine
5. Computer Networks (Elsevier)
4. IEEE Transactions on System, Man, and Cybernetics
3. Journal of Quality and Reliability Engineering International
2. Parallel Processing Letters
1. International Journal of Security and Networks (IJSN)

Conferences

15. The 28th IEEE Real-Time Systems Symposium (RTSS), 2007
14. IEEE Infocom (Infocom08)
13. IEEE Wireless and Communications and Networking Conference (WCNC07)
12. Ubiquitous Computing and Intelligence (UCI07)
11. International Symposium on UbiSafe Computing (UbiSafe07)
10. International Workshop on Smart Home (IWSH06)
9. International Conference on Information Warfare and Security (ICIW06, 07)
8. International Conference on High Performance Computing and Communications (HPCC06)
7. IEEE Infocom
6. IEEE International Conference on Distributed Computing Systems (ICDCS)
5. International Conference on Parallel Processing (ICPP)
4. IEEE Real-Time Systems Symposium (RTSS)
3. IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2. IEEE International Conference on Communications (ICC)
1. IEEE GlobeCom 05, 06, 07, 08

Conferences

15. The 28th IEEE Real-Time Systems Symposium (RTSS), 2007
14. IEEE Infocom (Infocom08)
13. IEEE Wireless and Communications and Networking Conference (WCNC07)
12. Ubiquitous Computing and Intelligence (UCI07)
11. International Symposium on UbiSafe Computing (UbiSafe07)
10. International Workshop on Smart Home (IWSH06)
9. International Conference on Information Warfare and Security (ICIW06, 07)
8. International Conference on High Performance Computing and Communications (HPCC06)
7. IEEE Infocom
6. IEEE International Conference on Distributed Computing Systems (ICDCS)
5. International Conference on Parallel Processing (ICPP)
4. IEEE Real-Time Systems Symposium (RTSS)
3. IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2. IEEE International Conference on Communications (ICC)
1. IEEE GlobeCom (05, 06, 07)

COLLABORATORS

- **Collaborators during the past 48 months:** Wei Zhao, Dong Xuan, Yong Guan, Wei Yu, Nan Zhang, Steve Graham, Shu Jiang, Ye Zhu, Riccardo Bettati, Xun Wang, Ryan Pries, Zhen Ling, Junzhou Luo, Xukai Zou, Kevin Streff, Bin Lu, Jangwon Lee
- **Ph.D Advisor:** Dr. Wei Zhao, Rector, University of Macau

OTHER AFFILIATIONS

- Association for Computing Machinery (ACM) member
- Institute of Electrical and Electronics Engineers (IEEE) member
- International High Technology Crime Investigation Association (HTCIA) member

MEDIA COVERAGE

- Researchers Receive \$1.3M for Cyber Security, eNews, University of Massachusetts Lowell, http://www.uml.edu/Media/snapshots/print_1_181371_181371.html, 21 Apr 2010
- CS Prof Finds Internet Communications Flaw: Weakness Could Compromise Online Privacy and Security, The Shuttle, a publication of the University of Massachusetts Lowell, Mar. 25, 2009
- Black Hat : Is Tor really anonymous?, Sean Michael Kerner on February 19, 2009 2:49 PM, *Internetnews*, <http://blog.internetnews.com/skerner/2009/02/black-hat-is-tor-really-anonym.html>

- “One cell is enough to break Tor’s anonymity”, Roger Dingledine, February 18th, 2009, <https://blog.torproject.org/blog/one-cell-enough>
- College professors need time to write grant proposals for research - Fu says reducing teacher load is necessary at DSU, other universities, *Madison Daily Leader*, November 15, 2007
- DSU professor awarded NSF grants, *Madison Daily Leader*, November 14, 2007
- Table tennis tournament here saturday features madison machine, sioux falls, *Madison Daily Leader*, February 15, 2007
- Dakota State fighting hackers, *Argus Leader (SD)*, July 9, 2006, URL: <http://www.argusleader.com/apps/pbcs.dll/article?AID=/20060709/NEWS/607090308&SearchID=73250258253819>
- Individual research benefits from state grants, *State (SD) News Web*, July 3, 2006, URL: <http://www.state.sd.us/News/showDoc.aspx?i=7532>
- DSU faculty among those receiving governor’s grants, *Madison Daily Leader*, July 3, 2006

IMMIGRATION STATUS

Permanent Resident of USA