

FARAH KANDAH

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EDUCATION

Computer Science, Doctor of Philosophy (Ph. D.) May 2012
North Dakota State University, Fargo, ND (USA).

Specialized in privacy and security, performance enhancement and quality of service assurance in wireless networks. Served as **Research Assistant**, where I conducted research on network security, reliability, routing, quality of service assurance, interference influence minimization, and energy consumption in wireless networks. Served as **Teaching Assistant** for introductory programming and problem solving courses including; CSCI 159 computer science solving problem, CSCI 227 computing fundamentals (I) and CSCI 116 business use of computers. My responsibilities include; individually teaching, assignment grading, developing course materials such as exam questions and homework problems.

Ph. D. Dissertation: A Secure and Reliable Interference-aware Wireless Mesh Network Design.

Computer Science, Master of Science June 2005
The University of Jordan, Amman, JORDAN.

Specialized in the field of computer networks. Conducted research on wireless network, contributed to team projects, and simulated real-world applications.

Master thesis: Evaluation of the TCP's Fast Retransmit Mechanism over IEEE 802.11's DCF.

Computer Science, Bachelor of Science June 2002
The Hashemite University, Zarqa, JORDAN.

Covered a wide variety of computer science topics such as computer science and network fundamentals, programming languages, and system analysis.

EXPERIENCE

Research Assistant, January 2009 – Present
North Dakota State University, Fargo, ND (USA).
<http://cs.ndsu.nodak.edu>

Conducted research on network security, reliability, routing, quality of service (QoS) assurance, interference influence minimization, energy consumption in wireless networks. Assisted in proposals preparations, my responsibilities include searching for related topics, identifying problems, discussing solutions and implementing simulations to get preliminary results. Through my research, I built a strong knowledge base and experience in using different network simulators such as, NS2, GloMoSim, and LEDA.

Teaching Assistant, August 2011 - Present
North Dakota State University, Fargo, ND (USA).
<http://cs.ndsu.nodak.edu>

Served as a Teaching Assistant, where I taught individually computer science courses including; Computer Fundamentals (CSCI 227) course for 40 students, Computer Science Problem Solving (CSCI 159) course for 20 students and CSCI 116 business use of computers (2 sections with 40 students each). Through my career, I developed course materials such as power point presentations and animated examples, evaluated students' progress through homework assignments, in class quizzes and exams.

Lecturer and Course Coordinator,
The Hashemite University, Zarqa, JORDAN.
<http://www.hu.edu.jo>

August 2005 – December 2007

Served as a Lecturer where I taught computer skills, Information systems fundamentals, and programming languages (C, C++ and JAVA) courses. Also I taught computer networks fundamentals, TCP/IP protocols and computer network design. Besides being a lecturer, I served as an advisor for undergraduate students on courses' registration process and academic matters as well as supervised undergraduate projects. Also I prepared syllabus and served as a course coordinator for computer networks and object oriented programming courses.

Research Assistant,
The University of Jordan, Amman, JORDAN.
<http://ju.edu.jo>

October 2003 – June 2005

Conducted research on Mobile Ad-hoc Networks performance, built a strong knowledge experience using routed protocols and become familiar with different routing protocols.

SKILLS AND QUALIFICATIONS

- **Operating Systems:** Linux/UNIX, Windows 7/Vista/XP.
- **Simulation Tools:** LEDA, GloMoSim, NS2, Matlab, etc.
- **Learning management systems:** Blackboard.
- **Programming languages:** C/C++, JAVA, Visual Basic.
- **Document markup languages:** LaTeX.
- **Integrated development environments (IDEs):** Visual Studio, Eclipse, NetBeans, Textpad, etc.
- **Web design:** Dreamweaver, Photoshop.
- 5+ years of algorithm design.
- 9+ years of programming experience.
- Fast learning ability.
- Leadership, team building, and project management.
- Self-motivated.
- Excellent oral and written communication skills.
- Strong ability to reach goals.
- Strong analytical and organizational skills.

PROJECTS

- Path Signature Mitigation Scheme against malicious attacks (Simulated using GloMoSim).
- Misleading Routing Attack in Mobile Ad-hoc Networks. (Simulated using GloMoSim).
- Collusion Injected Attack in Mobile Ad-hoc Networks. (Simulated using GloMoSim and LEDA).
- Performance evaluation of TCP's Fast Retransmission mechanism (Simulated using NS2).
- Information Retrieval application (Implemented using JAVA).
- Deadlock avoidance using token rings (Implemented using JAVA).
- Endogenous Retrovirus (ERV) in Human Genome (Implemented using JAVA).

AWARDS

- North Dakota State University, 2010 grant to attend and participate in the Consumer Communications and Networking Conference (CCNC'2010) in Las Vegas, NV (USA).
- Tuition waiver and research assistantship to pursue Ph.D. of Computer Science at North Dakota State University (2008).
- Tuition waiver and research assistantship to pursue M.Sc. of Computer Science at The University of Jordan (2003).

PROFESSIONAL ACTIVITIES

Membership: IEEE Graduate Student Member and IEEE Communication Society (ComSoc) member.

Journal Reviewer: WILEY's Security and Communication Networks (SCN) Journal, International Journal of Information Processing and Management (IJIPM), Journal of Computer Systems, Networks and Communications (JCSNC).

Conference Reviewer: IEEE ICNC 2012, IEEE Globecom 2011, IEEE ICC 2011 and IEEE Globecom 2010.

Workshop Reviewer: IEEE INFOCOM 2011 Workshop on Machine-to-Machine (M2MCN), WIP of PerCom 2011, International workshop on Quality of Service (IWQoS) 2010, IEEE INFOCOM 2010 (Student Workshop).

TPC member: IEEE ICNC 2012, IEEE INFOCOM 2011 workshop on Machine-to-Machine Communications and Networking (M2MCN).

Conference Attendance: IEEE Globecom 2010, ND EPSCoR State Conference 2010, IEEE CCNC 2010 and ND EPSCoR State Conference 2009.

PRESENTATIONS AT INTERNATIONAL MEETINGS

- IEEE Globecom 2010 (Miami, FL. USA).
- IEEE CCNC 2010 (Las Vegas, NV. USA).
- ND EPSCoR 2010 (Grand Forks, ND. USA).
- ND EPSCoR 2009 (Fargo, ND. USA).

LANGUAGES

Fluent in **ENGLISH** and **ARABIC** (native).

PUBLICATIONS

REFEREED JOURNAL ARTICLES:

- Farah Kandah, Yashaswi Singh and Weiyi Zhang, "Mitigating Eavesdropping Attack using Secure Key Management Scheme in Wireless Mesh Networks", **Journal of Communications (JCN, ISSN 1796-2021)** (Accepted for publication).
- Farah Kandah, Yashaswi Singh, Weiyi Zhang and Tie Wang, "A Misleading Active Routing Attack in Mobile Ad-hoc Networks", **International Journal of Security and Networks (IJSN)** (Accepted for publication).
- Weiyi Zhang, Farah Kandah, Chonggang Wang and Tao Jiang, "OFDMA Scheduling and QoS Routing in Hybrid Wireless Networks", **International Journal of Information Processing and Management (IJIPM)** (Accepted for publication).
- Weiyi Zhang, Farah Kandah, Xiaojiang Du and Chonggang Wang (2011), "Self-protecting Networking using Dynamic p-cycle Consideration with Link Capacity Constraint", **Security and Communication Networks, Wiley**, issn 1939-0122, doi: 10.1002/sec.364.
- Farah Kandah, Weiyi Zhang, Chonggang Wang and Juan Li (2011), "Diverse Path Routing with Interference and Reusability Consideration in Wireless Mesh Networks", **Mobile Networks and Applications**, pp. 1-10, vol. , Issue 1383-469X, doi:10.1007/s11036-011-0301-y.
- Weiyi Zhang, Farah Kandah, Chonggang Wang and Hongxiang Li (2011), "Dynamic Light Trail Routing in WDM Optical Networks", **Photonic Network Communications**, pp. 78 – 89, vol. 21, Issue: 1, doi: 10.1007/s11107-010-0282-y.

CONFERENCE PAPERS:

- Farah Kandah, Yashaswi Singh, Weiyi Zhang and Tie Wang (2011), "MIRA: Misleading Routing Attack in Mobile Ad-hoc Networks", **IEEE GLOBECOM 2011** (Accepted).
- Farah Kandah, Weiyi Zhang, Xiaojiang Du and Yashaswi Singh (2011), "A Secure Key Management Scheme in Wireless Mesh Networks", **Communications (ICC), 2011 IEEE International Conference on**, vol., no., pp.1-5, 5-9 June 2011, doi: 10.1109/icc.2011.5962807.
- Farah Kandah, Yashaswi Singh and Chonggang Wang (2011), "Colluding Injected Attack in Mobile Ad-hoc Networks", **Computer Communications Workshops (INFOCOM WKSHPS), 2011 IEEE Conference on**, vol., no., pp.235-240, 10-15 April 2011, doi: 10.1109/INFCOMW.2011.5928815.

- Yashaswi Singh, **Farah Kandah** and Weiyi Zhang (2011), “A Secure Cost-effective Multi-Cloud Storage in Cloud Computing”, *Computer Communications Workshops (INFOCOM WKSHPS), 2011 IEEE Conference on*, vol., no., pp.619-624, 10-15 April 2011, doi: 10.1109/INFOCOMW.2011.5928887.
- **Farah Kandah**, Weiyi Zhang, Yashaswi Singh and Juan Li (2010), “Interference-aware Robust Wireless Mesh Network Design”, *GLOBECOM 2010, 2010 IEEE Global Telecommunications Conference*, vol., no., pp.1-5, 6-10 Dec. 2010, doi: 10.1109/GLOCOM.2010.5683887.
- Weiyi Zhang, **Farah Kandah**, Jian Tang and Kendall Nygard (2010), “Interference-Aware Robust Topology Design in Multi-Channel Wireless Mesh Networks”, *Consumer Communications and Networking Conference (CCNC), 2010 7th IEEE*, vol., no., pp.1-5, 9-12 Jan. 2010, doi: 10.1109/CCNC.2010.5421854.

WORK SUBMITTED:

- **Farah Kandah**, Weiyi Zhang, Yashaswi Singh, Chonggang Wang, “Improving User Satisfaction with Interference-aware Wireless Mesh Network Design”, *IEEE Transaction on Parallel and Distributed Systems (TPDS)* (Submitted).

WORK IN PROGRESS:

- **Farah Kandah**, Yashaswi Singh, Weiyi Zhang and Chonggang Wang, “Mitigating Colluding Injected Attack using Monitoring Verification in Mobile Ad-hoc Networks”.
- **Farah Kandah**, Yashaswi Singh, Weiyi Zhang and Kendall Nygard, “Path Signature Versus Misleading Routing Attack in Mobile Ad-hoc Networks”.
- **Farah Kandah**, Yashaswi Singh, Weiyi Zhang and Chonggang Wang, “Decisions Misleading with Colluding Injected Attack in Mobile Ad-hoc Networks”.

REFERENCES

Dr. Kendall Nygard

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Department of Computer Science,
North Dakota State University (Fargo, ND. USA).
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