

Curriculum Vitae

Hyunyoung Lee

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Education

- 2001 **Ph.D., Computer Science**
TEXAS A&M UNIVERSITY, College Station, TX
Advisor: Dr. Jennifer L. Welch
Thesis: *Randomized Memory Model and Its Applications in Distributed Computing*
- 1998 **M.A., Computer Science**
BOSTON UNIVERSITY, Boston, MA
Advisor: Dr. Abdelsalam A. Heddaya
Thesis: *Online Stable Matching as a Means of Allocating Distributed Resources*
- 1992 **M.S., Computer Science**
EWHA UNIVERSITY (the best women's university in Korea), Seoul, Korea
Thesis: *Intelligent Program Verifier Using Floyd-Hoare Logic*
- 1987 **B.S., Computer Science**
EWHA UNIVERSITY, Seoul, Korea

Research Interests

- Distributed and Parallel Algorithms and Systems: Distributed algorithms and their analysis for dynamic distributed systems (i.e., systems with churn). Specification, implementation, and application of distributed shared data structures and their consistency models. Randomized distributed data structures and algorithms for improved fault-tolerance and efficiency. Parallel algorithmic models for multi-core/multi-threaded architectures including hardware and software transactional memories.
- Wireless Mobile Computing: Design and analysis of distributed algorithms for various problems in wireless, mobile communication systems and wireless sensor networks. Design and analysis of solutions for wireless security problems. Spatio-temporal algorithms and analysis for mobile computing.
- Fault-Tolerant Computing and Reliable Computing: Development of practical attack models and defense systems, particularly in Byzantine (arbitrary) faulty computing environments. Development of distributed server systems that can better sustain denial of service attacks.

Professional Experience

- 09/2012 – now Texas A&M University, College Station, TX. Dept. of Computer Science & Engineering. TEES Research Associate Professor.
- 07/2008 – 08/2012 Texas A&M University, College Station, TX. Dept. of Computer Science & Engineering. TEES Research Assistant Professor.
- 06/2008 – now Texas A&M University, College Station, TX. Dept. of Computer Science & Engineering. Part-time Senior Lecturer.
- 09/2001 – 08/2008 University of Denver (DU), Denver, CO. Dept. of Computer Science. Assistant Professor. (Was on-leave: Spring 2006, 8/2007–8/2008)
- 09/1997 – 08/2001 Texas A&M University. Dept. of Computer Science. Graduate Research Assistant and Graduate Teaching Assistant (GTA). (GTA for “Data Structures in C and Java”, “Programming in C and Java”, and “Formal Languages and Automata”.)
- 01/1994 – 08/1997 Boston University, Boston, MA. Dept. of Computer Science. Graduate Research Assistant and Teaching Fellow (for Algorithms). (Summer 1996: Instructor for “Introduction to Computer Science II”.)
- 06/1995 – 07/1996 Bellcore (Bell Communications Research, now Telcordia), Morristown, NJ. Network Optimization and Computing Research Group. Member of Technical Staff. Participated in developing software tools to create alternative demand scenarios from base scenarios, for fault-tolerant robust communications network design and evaluation.
- 01/1995 – 06/1995 Boston University, Boston, MA. Dept. of Computer Science. Assistant to the system administrator for Solaris.
- Summer 1993 Seoul National Teacher’s University, Seoul, Korea. Dept. of Computer Education. Instructor for “Introduction to Computer Science”.
- 03/1992 – 06/1993 Ajou University, Suwon, Korea. Dept. of Information Science and Dept. of Computer Engineering. Instructor for “High Level Programming in C”, “Data Structures Using C”, “Programming in Fortran”, “Assembly Language Programming”, and “Computer Architecture”.
- 03/1990 – 02/1992 Ewha University, Seoul, Korea. Dept. of Computer Science. System administrator for SUN 4/37.
- 06/1987 – 03/1990 Korean Air, Seoul, Korea. Information Systems Department.
Member of Technical Staff: Operating System Support for MVS/XA, VM, and ACP (Airline Control Program).
Remote Systems Network Administrator: Setup and customized IBM System/36 and AS/400 for remote sites (Hawaii in U.S., and Pusan and Kimpo in Korea) via SNA. Controlled and managed communication and file transfer between host (MVS/XA and IMS) and remote systems (L.A. in U.S., and Pusan and Kimpo in Korea).
Host System Security Administrator: Installed and customized RACF (Resource Access Control Facility), and managed system resources via RACF.

Professional Associations Memberships

- Lifetime member of ACM and Member of IEEE.

Scholarly Activities

1. Refereed Publications (Student co-authors are in boldface.)

1A. Refereed Journal Publications

- **Jiaqi Wang**, **Edward Talmage**, Hyunyoung Lee, and Jennifer L. Welch. “Improved Time Bounds for Linearizable Implementations of Abstract Data Types.” Submitted to *Information and Computation*, Elsevier, in November 2014. (Revision submitted in May 2016)
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Finding Available Parking Spaces Made Easy.” *Ad Hoc Networks*, Elsevier Science. Volume 12, pages 243–249. 2014.
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Dynamic Regular Registers in Systems with Churn.” *Theoretical Computer Science (TCS)*, Elsevier. Volume 512, pages 84–97. 2013.
- Cheng Shao, Jennifer L. Welch, Evelyn Pierce and Hyunyoung Lee. “Multi-Writer Consistency Conditions for Shared Memory Registers.” *SIAM Journal on Computing*. Volume 40, issue 1, pages 28–62. January 2011.
- Khushboo Kanjani, Hyunyoung Lee, **Whitney L. Maguffee** and Jennifer L. Welch. “A Simple Byzantine Fault-Tolerant Algorithm for a Multi-Writer Regular Register.” *International Journal of Parallel, Emergent and Distributed Systems*. Volume 25, number 5, pages 423–435. 2010.
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Scheduling Sensors by Tiling Lattices.” *Parallel Processing Letters*, 20(1):3–13. 2010.
- **Seth Voorhies**, Hyunyoung Lee, and Andreas Klappenecker. “Fair Service for Mice in the Presence of Elephants.” *Information Processing Letters*, Elsevier. Volume 99, issue 3, pages 96–101. 2006.
- Hyunyoung Lee and Jennifer L. Welch. “Randomized Registers and Iterative Algorithms.” *Distributed Computing*, Springer-Verlag. Volume 17, number 3, pages 209–221. 2005.
- Hyunyoung Lee, Jennifer L. Welch, and Nitin H. Vaidya. “Location Tracking with Quorums in Mobile Ad Hoc Networks.” *Ad Hoc Networks*, Elsevier Science. Volume 1, issue 4, pages 371–381. 2003.
- Hyunyoung Lee. “Online Stable Matching as a Means of Allocating Distributed Resources.” *Journal of Systems Architecture*. Volume 45, pages 1345–1355. 1999.

1B. Refereed Conference Publications

- Andreas Klappenecker and Hyunyoung Lee. “Probabilistic Biquorums.” *Proceedings of the 2nd IEEE International Conference on Information Science and Security (ICISS 2015)*, pages 196–199. December 2015. (Acceptance rate: 29%)
- **Jiaqi Wang, Edward Talmage**, Hyunyoung Lee, and Jennifer L. Welch. “Improved Time Bounds for Linearizable Implementations of Abstract Data Types.” *Proceedings of the 28th IEEE International Parallel & Distributed Processing Symposium (IPDPS 2014)*, pages 691–701. May 2014. (Acceptance rate: 21.1%)
- Andreas Klappenecker and Hyunyoung Lee. “Strong Dynamic Consensus in Byzantine Faulty Systems with Churn.” *Proceedings of the 19th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2013)*, pages 323–330. December 2013. (Acceptance rate: 30.0%)
- Silvia Bonomi, Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Stochastic Modeling of Dynamic Distributed Systems with Crash Recovery and Its Application to Atomic Registers.” *Proceedings of the 16th International Conference On Principles Of Distributed Systems (OPODIS 2012)*, pages 76–90. December 2012. (Acceptance rate: 26.9%)
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Dynamic Regular Registers in Systems with Churn.” *Proceedings of the 13th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2011)*, pages 296–310. October 2011. (Acceptance rate: 36%)
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Quorum-Based Dynamic Regular Registers in Systems with Churn.” *Proceedings of the 3rd International Workshop on Theoretical Aspects of Dynamic Distributed Systems (TADDS 2011)*, pages 3–7. September 2011 (in conjunction with DISC).
- **Jiaqi Wang**, Jennifer L. Welch and Hyunyoung Lee. “Time Bounds for Shared Objects in Partially Synchronous Systems.” *Proceedings of the ACM Symposium on Principles of Distributed Computing (PODC 2011)*, pages 347–348. June 2011.
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Finding Available Parking Spaces Made Easy.” *Proceedings of The 6th ACM SIGACT/SIGMOBILE International Workshop on Foundations of Mobile Computing (DIALM-POMC 2010)*, pages 49–52. September 2010. (Acceptance rate: 53%)
- Khushboo Kanjani, Hyunyoung Lee, and Jennifer L. Welch. “Byzantine Fault-Tolerant Implementation of a Multi-Writer Regular Register.” *Proceedings of the 23rd IEEE International Parallel & Distributed Processing Symposium (IPDPS 2009): 14th IEEE Workshop on Dependable Parallel, Distributed and Network-Centric Systems (DPDNS 2009)* (CD ROM: 8 pages). May 2009.
- **Gautam Roy**, Hyunyoung Lee, Jennifer L. Welch, **Yuan Zhao, Vijit Pandey**, and Deborah Thurston. “A Distributed Pool Architecture for Genetic Algorithms.” *Proceedings of the 11th IEEE Congress on Evolutionary Computation (IEEE CEC 2009)*, pages 1177–1184. May 2009. (Acceptance rate: 45%).

- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Brief Announcement: Scheduling Sensors by Tiling Lattices.” *Proceedings of the ACM Symposium on Principles of Distributed Computing (PODC 2008)*, page 437. August 2008.
- **Lan Lin** and Hyunyoung Lee. “Distributed Algorithms for Dynamic Coverage in Sensor Networks.” *Proceedings of the ISCA 20th International Conference on Parallel and Distributed Computing Systems (PDCS 2007)*. September 2007.
- **Lan Lin** and Hyunyoung Lee. “A Dynamic Medial Axis Model for Sensor Networks.” *Proceedings of the 12th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2007)*, pages 146–153. August 2007. (Acceptance rate: 29.6%).
- **Lan Lin** and Hyunyoung Lee. “Brief Announcement: Distributed Algorithms for Dynamic Coverage in Sensor Networks.” *Proceedings of the 26th ACM Symposium on Principles of Distributed Computing (PODC 2007)*. August 2007.
- Michel Dubois, Hyunyoung Lee and **Lan Lin**. “STAMP: A Universal Algorithmic Model for Next-Generation Multithreaded Machines and Systems.” *Proceedings of the 21st IEEE International Parallel & Distributed Processing Symposium (IPDPS 2007): Workshop on Multithreaded Architectures and Applications (MTAAP 2007)* (CD ROM: 8 pages). March 2007.
- Hyunyoung Lee and Andreas Klappenecker. “An Approach to Location Tracking of Mobile Sensors based on Distributed Randomized Multisets.” *Proceedings of the 3rd International Conference on Networked Sensing Systems (INSS 2006)*, pages 234–239. May-June 2006. (Acceptance rate: 28%).
- Hyunyoung Lee, Andreas Klappenecker, Kyungsook Lee, and **Lan Lin**. “Energy Efficient Data Management for Wireless Sensor Networks with Data Sink Failure.” *Proceedings of the 1st Workshop on Resource Provisioning and Management in Sensor Networks (RPMSN 2005)* (CD ROM: 7 pages). November 2005. (Acceptance rate: 40%).
- **Kevin Bauer** and Hyunyoung Lee. “A Distributed Authentication Scheme for a Wireless Sensing System.” *Proceedings of the 2nd International Workshop on Networked Sensing Systems (INSS 2005)*, pages 210–215, June 2005. (Acceptance rate: 24%).
- Hyunyoung Lee. “Parallel Hashing Algorithms on BSP and QSM Models.” *Proceedings of 6th Workshop on Advances in Parallel and Distributed Computational Models (APDCM 2004)* (CD ROM: 8 pages). April 2004.
- **Seth Voorhies** and Hyunyoung Lee. “A Probabilistic Web Server Defense Scheme Against Distributed Denial of Service Attacks.” *Proceedings of American Association of Advancement of Science ‘03 Meeting (AAAS 2003)* (CD ROM page A143). February 2003. **Won the first prize in poster presentation.**
- Hyunyoung Lee and Jennifer L. Welch. “Randomized Shared Queues Applied to Distributed Optimization Algorithms.” *Proceedings of 12th International Symposium on Algorithms and Computation (ISAAC 2001)*, pages 587–598. December 2001. (Acceptance rate: 50%).

- Hyunyoung Lee and Jennifer L. Welch. “Brief Announcement: Randomized Shared Queues.” *Proceedings of 20th ACM Symposium on Principles of Distributed Computing (PODC 2001)*, pages 311–313. August 2001.
- Hyunyoung Lee and Jennifer L. Welch. “Applications of Probabilistic Quorums to Iterative Algorithms.” *Proceedings of 21st International Conference on Distributed Computing Systems (ICDCS 2001)*, pages 21–28. April 2001. (Acceptance rate: 31.8%) **Nominated for best paper award.**
- Hyunyoung Lee and Jennifer L. Welch. “Brief Announcement: Specification, Implementation and Application of Randomized Regular Register.” *Proceedings of 19th ACM Symposium on Principles of Distributed Computing (PODC 2000)*, page 338. July 2000.

2. Non-refereed Publications and Technical Reports

- Hyunyoung Lee and Andreas Klappenecker. “Introducing Distributed Computing Concepts Into Discrete Mathematics Courses.” TAMU Technical Report 2016-2-1.
- **Jiaqi Wang, Edward Talmage**, Hyunyoung Lee, and Jennifer L. Welch. “Improved Time Bounds for Linearizable Implementations of Abstract Data Types.” TAMU Technical Report 2013-10-3 (Modified on 13th February, 2014).
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Quorum-Based Dynamic Regular Registers in Systems with Churn.” TAMU Technical Report 2011-8-2.
- Cheng Shao, Jennifer L. Welch, Evelyn Pierce and Hyunyoung Lee. “Multi-Writer Consistency Conditions for Shared Memory Registers.” TAMU Technical Report 2010-1-1.
- Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch. “Scheduling Sensors by Tiling Lattices.” CoRR abs/0806.1271:(2008). June 2008.
- Michel Dubois and Hyunyoung Lee “STAMP: A Universal Algorithmic Model for Next-Generation Multithreaded Machines and Systems.” *Proceedings of the 22nd IEEE International Parallel & Distributed Processing Symposium (IPDPS 2008): NSF Workshop on Next Generation Software (NSFNGS 2008)* (CD ROM: 5 pages). April 2008.
- Andreas Klappenecker and Hyunyoung Lee. “Randomized Sets and Multisets – A Literate C++ Program.” TAMU Technical Report 2004-10-7.
- Andreas Klappenecker and Hyunyoung Lee. “Randomized Sets and Multisets.” TAMU Technical Report 2004-10-6.

3. Professional Presentations

- “Consensus in Mobile Dynamic Distributed Systems.” Invited talk at the 10th ACM International Workshop on Foundations of Mobile Computing (FOMC 2014). August 2014.
- “Strong Dynamic Consensus in Byzantine Faulty Systems with Churn.” Presented at the 19th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2013). December 2013.

- “Dynamic Regular Registers in Systems with Churn.” Presented at the 13th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2011). October 2011.
- “Quorum-Based Dynamic Regular Registers in Systems with Churn.” Presented at the 3rd International Workshop on Theoretical Aspects of Dynamic Distributed Systems (TADDS 2011). September 2011.
- “Finding Available Parking Spaces Made Easy.” Presented at the 6th ACM International Workshop on Foundations of Mobile Computing (DIALM-POMC 2010). September 2010.
- “A Distributed Pool Architecture for Genetic Algorithms.” Presented at the 11th IEEE Congress on Evolutionary Computation (IEEE CEC 2009). May 2009.
- “STAMP: A Universal Algorithmic Model for Next-Generation Multithreaded Machines and Systems.” Presented at the 22nd IEEE International Parallel & Distributed Processing Symposium (IPDPS 2008): NSF Workshop on Next Generation Software (NSFNCS 2008). April 2008.
- “A Dynamic Medial Axis Model for Sensor Networks.” Presented at the 12th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2007). August 2007.
- “STAMP: A Universal Algorithmic Model for Next-Generation Multithreaded Machines and Systems.” Presented at the 21st IEEE International Parallel & Distributed Processing Symposium (IPDPS 2007). March 2007.
- (With Lan Lin.) “Dynamic Medial Axis Based Motion Planning in Sensor Networks.” Poster presentation at the 25th ACM Symposium on Principles of Distributed Computing (PODC 2006). July 2006.
- “An Approach to Location Tracking of Mobile Sensors based on Distributed Randomized Multisets.” Presented at the 3rd International Conference on Networked Sensing Systems (INSS 2006). June 2006.
- (With Yueh-Hua Lee.) “An Optimization of the Buddy Model for Securing Mobile Agents.” Poster presentation at the 24th ACM Symposium on Principles of Distributed Computing (PODC 2005). July 2005.
- “A Distributed Authentication Scheme for a Wireless Sensing System.” Presented at the CENG seminar series of the Department of Electrical Engineering-Systems at the University of Southern California (USC) (Host: Prof. Michel Dubois). June 2005.
- “Location Tracking with Virtual Shared Objects in Mobile Ad Hoc Networks.” Presented at the departmental seminar of the Department of Computer Science and Engineering at the University of Colorado at Denver. March 2005.
- “Parallel Hashing Algorithms on BSP and QSM Models.” Presented at the 6th Workshop on Advances in Parallel and Distributed Computational Models (APDCM 2004). Santa Fe, New Mexico. April 2004.

- “Location Management in Mobile Ad Hoc Networks.” Presented at the departmental colloquium of the Department of Computer Science at Ewha University, Seoul, Korea. December 2002.
- “Location Management in Mobile Ad Hoc Networks: Theory and Practice.” Presented at the departmental colloquium of the Department of Computer Science at Ajou University, Seoul, Korea. December 2002.
- “Location Management with Quorums in Mobile Ad Hoc Networks.” Presented at the departmental seminar series in Math and CS Department at Colorado School of Mines. September 2002.
- “Randomized Shared Queues Applied to Distributed Optimization Algorithms.” Presented at the 12th International Symposium on Algorithms and Computation (ISAAC 2001). Christchurch, New Zealand. December 2001.
- “Randomized Shared Queues.” Presented at the 20th ACM Symposium on Principles of Distributed Computing (PODC 2001). August 2001.
- “Applications of Probabilistic Quorums to Iterative Algorithms.” Presented at the 21st International Conference on Distributed Computing Systems (ICDCS 2001). April 2001.
- “Specification, Implementation, and Application of Randomized Regular Register.” Presented at the 19th ACM Symposium on Principles of Distributed Computing (PODC 2000). July 2000.

4. PhD Thesis Advised

- Lan Lin. PhD in Computer Science. University of Denver. Graduated in Summer 2007. Thesis title: “Dynamic Routing and Coverage in Wireless Sensor Networks”.

5. Other Professional Contributions

- Journal Editor
 - International Journal of Parallel, Emergent and Distributed Systems (IJPEDS)
- Journal Referee
 - *SIAM Journal on Computing (SICOMP)*
 - *Distributed Computing*, Springer-Verlag
 - *Wireless Networks*, Springer
 - *IEEE Transactions on Parallel and Distributed Systems (TPDS)*
 - *IEEE Transactions on Computers*
 - *IEEE Transactions on Industrial Electronics*
 - *IEEE Transactions on Vehicular Technology*
 - *Journal of Parallel and Distributed Computing (JPDC)*, Elsevier
 - *Empirical Software Engineering*, Elsevier
 - *Theoretical Computer Science A (TCSA)*, Elsevier Science

- *International Journal of Parallel, Emergent and Distributed Systems (IJPEDS)*, Taylor & Francis
- *Journal of Information Science and Engineering*, Institute of Information Science, Academia Sinica, Taiwan
- Book Review for BrooksCole Publishing
- NSF Review Panelist. 2004, 2010.
- Grace Hopper Celebration Conference Scholarship Reviewer. 2011, 2012.
- Conference Organization and Technical Program Committee
 - Program Committee Member. The 10th ACM International Workshop on Foundations of Mobile Computing (FOMC 2014) (reviewed two papers).
 - Program Committee Member. The 22nd International Conference on Computer Communication Networks (ICCCN 2013) (reviewed four papers).
 - Program Committee Member. The 21st International Conference on Computer Communication Networks (ICCCN 2012) (reviewed four papers).
 - Program Committee Member. The ninth International Conference on Networked Sensing Systems (INSS 2012) (reviewed five papers).
 - Program Committee Member. The eighth International Conference on Networked Sensing Systems (INSS 2011) (reviewed four papers).
 - Program Committee Member. The seventh International Conference on Networked Sensing Systems (INSS 2010) (reviewed three papers).
 - Program Committee Member. The sixth International Conference on Networked Sensing Systems (INSS 2009) (reviewed two papers).
 - Program Committee Member. The 22nd IEEE International Parallel & Distributed Processing Symposium (IPDPS 2008) (reviewed eleven papers).
 - Program Committee Member. The fifth International Conference on Networked Sensing Systems (INSS 2008) (reviewed six papers).
 - Program Committee Member. The fourth IEEE/IFIP International Symposium on Network Centric Ubiquitous Systems (NCUS 2008) (reviewed four papers).
 - Program Committee Member. The 12th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2007) (reviewed five papers).
 - Program Committee Member. The fourth International Conference on Networked Sensing Systems (INSS 2007) (reviewed eight papers).
 - Program Committee Member. The third IFIP International Symposium on Network Centric Ubiquitous Systems (NCUS 2007) (reviewed four papers).
 - Program Committee Member and Local Arrangement Chair. The 25th ACM Symposium on Principles of Distributed Computing (PODC 2006) (reviewed 17 papers).
 - Program Committee Member. The 13th IEEE International Conference on High Performance Computing (HiPC 2006) (reviewed nine papers).

- Program Committee Member. The 20th IEEE International Parallel & Distributed Processing Symposium (IPDPS 2006) (reviewed 18 papers).
- Program Committee Member. The second IFIP International Symposium on Network-Centric Ubiquitous Systems (NCUS 2006) (reviewed four papers).
- Program Committee Member. The first IFIP International Symposium on Network-Centric Ubiquitous Systems (NCUS 2005) (reviewed five papers).
- Program Committee Member and Session Chair. The first International Workshop on Resource Provisioning and Management in sensor Networks (RPMSN 2005) (reviewed four papers).
- Program Committee Member and Session Chair. The second International Workshop on Networked Sensing Systems (INSS 2005) (reviewed eight papers).
- Session Chair. The 24th International Conference on Distributed Computing Systems (ICDCS 2004).
- Publicity Chair. The 21st Annual ACM Symposium on Principles of Distributed Computing (PODC 2002).
- Webmaster. The 18th Annual ACM Symposium on Principles of Distributed Computing (PODC 1999).

6. Research Proposals and Grants

- “Root-Shoot Phenotyping and Water Balance Characterization to Improve Water Use Efficiency and Productivity of Cropping Systems in Texas.” Sponsor: Texas A&M AgriLife Research. (I was one of nine co-PIs.) Award duration: 9/1/2015 – 8/31/2017. Award amount: \$240,000.
- “CSR-SMA: Collaborative Research – STAMP: A Universal Algorithmic Model for Next-Generation Multithreaded Machines and Systems.” Agency: NSF. (Collaborative research with Michel Dubois at the University of Southern California (USC). I was the PI at DU.) Award duration: 8/15/06 – 7/31/2009. Award amount (DU): \$75,000.
- “COMP 3382: Secure Software Engineering – A Capstone Course.” DU Center for Teaching and Learning (CTL) funding. (I was a Co-PI). Awarded in December 2005 for one year. Award amount: \$9,000.
- “Defense Mechanisms Against Security Attacks in Wireless Networks.” DU PINS (Partners IN Scholarship). Faculty advisor honorarium \$505. (Undergraduate student Kevin Bauer was awarded \$1,500.) Award duration: Spring and Summer 2005.
- “Defense Mechanisms Against Security Attacks in Wireless Mobile Networks” DU Professional Research Opportunities for Faculty (PROF) funding. Awarded in June 2004. Award amount: \$7,800.

7. Miscellaneous Awards, Honors, etc.

- Won the first prize in the poster competition of the American Association for the Advancement of Science annual meeting (with undergraduate advisee Seth Voorhies). February 2003.
- Received Women’s Institute for Summer Enrichment (WISE) 2008 fellowship. June 2008.

Service Activities

At TAMU CSE Department

- Chair of Climate Committee (Fall 2014 – current)
- Member of TAMU Advance Center FASIT Team (Fall 2014 – current)
- Member of Climate Committee (Fall 2013 – Spring 2014)

At DU

- Departmental Committees
 - Chair of Faculty Search Committee (05–06).
 - Member of Faculty Search Committee (02–04, 06–07).
 - Member of Chair Search Committee (04–05).
 - Assessment (06–07).
 - Webmaster (02–05).
 - Colloquium Chair (02–03, 05–06).
 - Member of Graduate Committee (03–07).
 - Member of Curriculum Committee (03–05).
 - Member of Java Team (01–02).
 - Member of Equipment Committee (01–02).
 - Undergraduate Bulletin (01–02).
 - Member of Computational Geometry Qualifying Exam Committee (Fall 2006).
 - Member of Algorithms Qualifying Exam Committee (Fall 2005).
- School of Engineering and Computer Science Committees
 - Assessment Representative (06–07).
 - Member of Recruitment and Retention Committee (03–04).
- University Committee: Member of Library Renovation Advisory Council (05–06).

Teaching (Since 2001)

Courses Taught At Texas A&M University¹

- CSCE 222 Online Course on Discrete Structures for Computing [Summer '16]
- CSCE 222 Discrete Structures for Computing [Spring '12, Summer '12, Spring '13, Fall '13, Spring '14, Fall '14, Spring '15, Spring '16, Fall '16]
- CSCE 314 Programming Languages [Fall '13, Spring '14, Fall '14, Fall '15, Fall '16]
- CSCE 312 Computer Organization [Spring '13]
- CSCE 121 Introduction to Program Design and Concepts [Fall 2011, Spring 2012]
- CSCE 111 Introduction to Computer Science Concepts and Programming [Fall 2011]
- ENGR 112 Foundations of Engineering II [Fall 2009]
- CPSC 206 Structured Programming in C [Fall 2008, Spring 2010, Fall 2010, Spring 2011]
- CPSC 601 Programming with C & Java [Spring 2009]
- CPSC 602 Object-Oriented Programming Development & Software Engineering [Summer 2008]

¹Course numbering scheme: 1XX–freshman; 2XX–sophomore; 3XX–junior; 6XX–graduate level.

Recent Teaching Improvement Activities.

1. I attended an ITS (Instructional Technology Services) Faculty Workshop on “Flipping Your Course” in Fall 2013 to learn about methods and software techniques for turning a course into a flipped style. As a result, I have partially flipped my courses and incorporated in-class exercises in almost every class for both CSCE 222 and CSCE 314. These courses cover abstract concepts that are difficult to master. I carefully designed the in-class exercises so that the students are constantly engaged in the class, gradually improving their problem solving skills, which allows the students to bridge the gap between abstract concepts and applications. The goal of my approach is to reinforce early mastery of key concepts and to enable the students to tackle more difficult homework problems. Students have commented positively on this approach as a successful way to improve their understanding of the course topics.
2. Together with Andreas Klappenecker, I held a weekly seminar on Discrete Mathematics in Fall 2015, based on the book that I am coauthoring with Andreas Klappenecker. The book is intended for use as a textbook in the CSCE 222 Discrete Structures for Computing course. The attendees (students) provided an early feedback on the book, which has helped us improve the book by the incorporation of students’ views. The students have also shown very positive interests and have asked it to be continued in future semesters.
3. In Summer 2016, I created and co-taught with Andreas Klappenecker an online course for CSCE 222 Discrete Structures for Computing. The course was fully online and we created lecture notes with more than 300 exercises, a completely new set of slides, and more than 100 video clips for the course. We successfully engaged the students in their reading assignments by transforming singular reading into a group activity using the social platform perusall. We created for each learning module formative quizzes that reinforced the material, and directed students to appropriate lecture notes and video materials when deficiencies were discovered in the quiz. We also developed challenging end-of-module quizzes that ensured mastery of the material.

We created an intuitive self-guiding structure for the course on ecampus that allowed the students to keep up with the rapidly-paced course at all times; this structure is now a model for all short five week online courses at Texas A&M. We used in-person proctoring for the exams to ensure the integrity of the examinations. The course was successful and we received a lot of positive feedback, including student comments such as “This was the best online course I have taken.” This is indeed high praise for an extremely challenging course that teaches student logical reasoning, proofs, and problem solving skills. The course was chosen by the engineering distance education office as a showcase for successful technology implementation in an online course.

Courses Taught At DU²

- COMP 1671 Introduction to Computer Science I [Fall 2001]
- COMP 1672 Introduction to Computer Science II [Winter 2002]
- COMP 2370 Introduction to Algorithms & Data Structures [Fall 2002, Fall 2003]

²Course numbering scheme: 1XXX–freshman; 2XXX–sophomore; 3XXX–junior, senior and lower-level graduate; 4XXX–graduate level. “new” indicates a newly developed course by me.

- COMP 3200 Discrete Structures [Winter 2003, Winter 2004, Winter 2005]
- COMP 3704 Fault-Tolerant Computing (**new**) [Fall 2002]
- COMP 3704 Distributed & Networked Computing Systems (**new**) [Winter '04, Fall '04]
- COMP 4362 Operating Systems II (new material and new programming projects) [Spring 2002, Spring 2003, Spring 2004, Spring 2005, Spring 2007]
- COMP 4704 Distributed Computing (**new**) [Winter 2003]
- COMP 4704 Fault-Tolerant Computing (**new**) [Fall 2005]
- COMP 4704 Advanced Fault-Tolerant Computing (**new**) [Fall 2003]
- COMP 4704 Mobile Computing (**new**) [Winter 2007]
- COMP 4704 Distributed Systems (**new**) (taught at Lockheed Martin) [Spring 2007]
- COMP 4705 Distributed Algorithms (**new**) [Winter 2005, Winter 2006]