

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 Systems and Algorithms: Specification, implementation, and application of distributed shared data structures, especially randomized ones for improved fault-tolerance and efficiency. Parallel algorithmic models for multithreaded parallel architectures.
- 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.
- 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. Analysis of mobility patterns of the mobile nodes. Spatio-temporal algorithmic models for mobile computing.

## Professional Experience

- 07/2008 – now Texas A&M University (TAMU), College Station, TX. Dept. of Computer Science & Engineering. Research Assistant Professor.
- 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 (intern for summer and consultant for academic year). (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): Maintained operating systems – monitored and controlled system load, managed disk space, spooling subsystems and devices, installed and customized control programs.  
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 (disk space and devices) via RACF security.

## Professional Associations Memberships

- Member of IEEE and ACM.

## Scholarly Activities

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

#### 1A. Refereed Journal Publications

- **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. August 2006.
- Hyunyoung Lee and Jennifer L. Welch. “Randomized Registers and Iterative Algorithms.” *Distributed Computing*, Springer-Verlag. Volume 17, number 3, pages 209–221. March 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. November 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

- Khushboo Kanjani, Hyunyoung Lee, and Jennifer L. Welch. “Byzantine Fault-Tolerant Implementation of a Multi-Writer Regular Register.” To appear in *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)* (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**

- 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.

### **3. Professional Presentations**

- “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 (NSFNGS 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 (at DU)**

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

#### **5. Other Professional Contributions**

- Journal Referee
  - *Distributed Computing*, Springer-Verlag
  - *IEEE Transactions on Parallel and Distributed Systems (TPDS)*
  - *IEEE Transactions on Computers*
  - *IEEE Transactions on Vehicular Technology*
  - *Journal of Parallel and Distributed Computing (JPDC)*, Elsevier
  - *Empirical Software Engineering*, Elsevier
  - *Theoretical Computer Science A (TCSA)*, Elsevier Science
  - *Journal of Information Science and Engineering*, Institute of Information Science, Academia Sinica, Taiwan
- Book Review for BrooksCole Publishing
  - Proposal for the 4th Ed. of “Understanding Operating Systems”
  - “Introduction to Programming Distributed Systems in Java”
  - Proposal for the 3rd Ed. of “Data Structures and Algorithms in C++”
- NSF Review Panelist. June 2004. (For the NSF Core Program of Control, Networks and Computational Intelligence (CNCI) and Integrative Systems (IS) in the Electrical and Communications Systems (ECS) Division.)

- Conference Organization and Technical Program Committees
  - Program Committee Member. The 6th International Conference on Networked Sensing Systems (INSS 2009).
  - Program Committee Member. The 22nd IEEE International Parallel & Distributed Processing Symposium (IPDPS 2008).
  - Program Committee Member. The 5th International Conference on Networked Sensing Systems (INSS 2008).
  - Program Committee Member. The 4th IEEE/IFIP International Symposium on Network Centric Ubiquitous Systems (NCUS 2008).
  - Program Committee Member. The 12th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA 2007) (reviewed 5 papers).
  - Program Committee Member. The 4th International Conference on Networked Sensing Systems (INSS 2007) (reviewed 8 papers).
  - Program Committee Member. The 3rd 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 9 papers).
  - Program Committee Member. The 20th IEEE International Parallel & Distributed Processing Symposium (IPDPS 2006) (reviewed 18 papers).
  - Program Committee Member. The 2nd IFIP International Symposium on Network-Centric Ubiquitous Systems (NCUS 2006) ( reviewed 4 papers).
  - Program Committee Member. The 1st IFIP International Symposium on Network-Centric Ubiquitous Systems (NCUS 2005) (reviewed 5 papers).
  - Program Committee Member and Session Chair. The 1st International Workshop on Resource Provisioning and Management in sensor Networks (RPMSN 2005) (reviewed 4 papers).
  - Program Committee Member and Session Chair. The 2nd International Workshop on Networked Sensing Systems (INSS 2005) (reviewed 8 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**

- Proposal title: “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 am the single PI at DU.) Project begin date: 8/15/06. Duration: two years (plus one year extension). Award amount (DU): \$75,000.

- Project title: “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. Award amount: \$9,000.
- Proposal title: “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.
- Proposal title: “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 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).

## Courses Taught (Since 2001)

### At TAMU<sup>1</sup>

- CPSC 206 Structured Programming in C [Fall 2008]
- CPSC 601 Programming with C & Java [Spring 2009]
- CPSC 602 Object-Oriented Programming Development & Software Engineering [Summer 2008]

### At DU<sup>2</sup>

- 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]
- 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 2004, Fall 2004]
- 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 Company) [Spring 2007]
- COMP 4705 Distributed Algorithms (**new**) [Winter 2005, Winter 2006]

revised May 24, 2009

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<sup>1</sup>Course numbering scheme: 200-level courses – freshman & sophomore; 600-level courses – graduate level.

<sup>2</sup>Course numbering scheme: 1000-level courses – freshman; 2000-level courses – sophomore; 3000-level courses – junior, senior, and lower-level graduate; 4000-level courses – graduate level. Each course was four credit hours. “**new**” indicates a newly developed course by me.)