

# YuanYuan Li

(as of 11/2010)

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## Research Interests:

Distributed autonomous mobile robotics, artificial intelligence, machine learning, bio-inspired computing, bio-informatics, wireless sensor networks, distributed sensing, distributed database systems, distributed networks, anomaly detection, human-robot cooperation, embedded systems.

## Education:

### The University of Tennessee, Knoxville, Tennessee, USA

Ph.D., Computer Science, Spring 2010

- GPA: 3.77/4.00
- Advisor: Professor Lynne E. Parker
- Dissertation title: Anomaly detection in unknown environments using wireless sensor networks
- Committee: Professors Michael Berry, Hairong Qi, Michael Thomason and Wesley Hines

M.S., Computer Science, Fall 2006

- GPA: 3.77/4.00

### Minnesota State University, Mankato, Minnesota, USA

M.S., Computer Science (January 2002 to May 2003)

- GPA: 4.00/4.00

B.S., Computer Science, Fall 2001

- Cum Laude

## Research Experiences:

Post-doctoral Researcher, **University Of Tennessee**, Biomedical Engineering, Knoxville, Tennessee, USA

*Machine learning-based approach for immune system and drug design* **September 2010 to present**

- Developing game-theoretic approach for drug delivery
- Developing game-theoretic approach for immune-virus game
- Developing network modeling for Gene Regulation Network

*Immune-inspired computational model* **September 2010 to present**

- Developing immune-inspired game theory for irregular warfare

*Plant-based sensor network for nanoparticles toxicity study* **September 2010 to present**

- Developed and submitted a NSF proposal.
- Developing a plant-based sensor-network for characterizing, monitoring, and understanding the environmental impact of both naturally occurring and man-made nanoparticles.

Graduate Research Assistant, **University Of Tennessee**, EECS, Knoxville, Tennessee, USA

*Anomaly detection in unknown environments using wireless sensor networks and a mobile robot* (Partly funded by Oak Ridge National Laboratory) **January 2006 to August 2010**

- Designed and implemented a variety of distributed machine learning algorithms on a hierarchical resource-constrained sensor network.

*Indoor wireless localization for mobile robots* **May 2004 to December 2005**

- Designed and implemented wireless indoor positioning system to locate mobile robots using triangulation and fingerprinting.

Graduate Research Assistant, **Minnesota State University**, Computer Science, Mankato, Minnesota, USA

*Bluetooth network simulator* (Individual study research project) **Summer 2003**

- Developed Bluetooth network simulation software that simulated the behavior of a Bluetooth PicoNet with 1 to 7 slaves by using JavaSimulation package (a Java package for process-based discrete event simulation).

*Text-to-Speech Synthesis for Mandarin Chinese* **2002 to 2003**

- Researched text-to-speech synthesis for Mandarin Chinese.

## Professional Experiences:

**Midwest Wireless Corporation** (now Alltel Corporation), Mankato, MN, USA

*Software developer* **May 2003 to August 2003**

- Developed a framework monitoring the SMSC (short messaging) server including short messages from phone-to-phone (NOKIA7160), phone-to-PC and PC-to-phone; and service messages push to the phone.

**SpeechGear Inc** (U.S. Naval Research funded project), Northfield, MN, USA

*Software developer* **July 2002 to May 2003**

- Designed and developed multiple interfaces for voice-enabled dictionary running on PDAs (Windows CE) using Java and eMbedded Visual Basic/C++.

**DataPlanIT Consulting**, Mankato, MN, USA

*Software developer* **January 2002 to May 2002**

- Web design and development for surrounding businesses using ASP.

**J.D.Edwards Company** (now Oracle Corporation), Denver, CO, USA

*Intern software developer* **Summer 2001**

- Wrote testing cases and suites for the MetaData software using JUnit.
- Documented test cases and developers' programs.

**Hairs Supply Company**, Chicago, IL, USA

*Software developer* **September 2000 to December 2000**

- Designed and developed an e-commerce website that sells hair supplies using ASP.

**Visible Edge Company**, Mankato, MN, USA

*Intern software developer* **Summer 2000**

- Upgraded and maintained the Performance Look Up System (PLUS) for Minnesota High Schools.
- Programmed and debugged for PLUS using Visual Basic.

## Teaching Experiences:

**The University of Tennessee**, Knoxville, Tennessee, USA

*Teaching Assistant* **August 2003 to present**

- CS100: Introduction to Computer Science (for non-majors)
  - *Responsibilities*: teach lab sessions, grade homeworks and exams, coordinate with other lab TAs, and tutor students
  - *Programming*: HTML, JavaScript and basic algorithms
- CS102: Introduction to Computer Science (for majors)
  - *Responsibilities*: teach lab sessions, grade homeworks and exams, coordinate with other lab TAs, and tutor students

- *Programming*: C++
- CS302: Fundamental Algorithms
  - *Responsibilities*: grade homework and tutor students
- CS365: Programming Languages and Systems
  - *Responsibilities*: prepare lecture notes, teach lab session, maintain class webpage, grade labs and homeworks
  - *Programming*: Java, Python and Perl
- CS530: Computer Systems Organization
  - *Responsibilities*: grade homework and tutor students
- CS594: Data Mining Practices and Principles
  - *Responsibilities*: grade homework and tutor students

#### **The Oak Ridge Associated Universities**, Oak Ridge, Tennessee, USA

*Research Facilitator*

**July 2008**

- Mentored a team of high school students on how to solve challenging navigation problems using a Vex Robotics Kit; sponsored by Appalachian Regional Commission and Oak Ridge Associated Universities.

#### **The Minnesota State University**, Mankato, Minnesota, USA

*Teaching Assistant*

**August 2001 to 2002**

- CS100: Introduction to Computer and Computing
  - *Responsibilities*: teach lab sessions and grade labs
  - *Programming*: Microsoft Office 2000, HTML and JavaScript

## **Publications:**

### **Refereed Conference Papers:**

- **Y. Li**, M. Thomason and L. E. Parker, "Detecting Time-Related Changes in Wireless Sensor Networks Using Symbol Compression and Probabilistic Suffix Trees", to appear in IEEE International Conference on Intelligent Robots and Systems (IROS), Taipei, Taiwan, 2010.
- **Y. Li** and L. E. Parker, "Detecting and monitoring time-related abnormal events using a wireless sensor network and mobile robot", in *Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2008.
- **Y. Li** and L. E. Parker, "A spatial-temporal imputation technique for classification with missing data in a wireless sensor network", in *Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2008.

### **Refereed Symposia, Lightly-Refereed Conference and Workshop Papers:**

- **Y. Li** and L. E. Parker, "Intruder detection using a wireless sensor network with an intelligent mobile robot response", IEEE SoutheastCon, April 2008.
- **Y. Li** and L. E. Parker, "Classification with missing data in a wireless sensor network", IEEE SoutheastCon, April 2008.
- **Y. Li** and S. Case, "Text-to-Speech Synthesis for Mandarin Chinese", in *Proceedings of the Midwest Instruction and Computing Symposium (MICS)*, April 2003.

### **Papers under Review:**

- **Y. Li** and L. E. Parker, "Nearest Neighbor Imputation Using Spatial-Temporal Correlations in Wireless Sensor Networks", submitted for journal publication, 2010.

### **Poster:**

- **Y. Li**, J. Wu, S. C. Lenaghan and M. Zhang, "An Immuno-Inspired Game Theoretic Computational Framework for Irregular Warfare", Naval Science & Technology Partnership Conference, 2010.

**Technical Reports:**

- **Y. Li**, "Indoor positioning using 802.11b for mobile robots", Distributed Robotics Laboratory, Department of Electrical Engineering and Computer Science, University of Tennessee, December 2005.

**Presentations:**

- "Study Complex Biological Systems: Network Modeling and AI-based Analysis", Guest lecture: Systems Biology and Complex System Theory, November, 2010, University of Tennessee, Knoxville, USA.
- "Environment monitoring using Wireless Sensor Networks", Guest lecture: Artificial Intelligence, November, 2009, University of Tennessee, Knoxville, USA.
- "Intruder detection using a wireless sensor network with an intelligent mobile robot response", the IEEE Southeast Conference, April 4 - 6, 2008, Alabama, Huntsville, USA.
- "Classification with missing data in a wireless sensor network", the IEEE Southeast Conference, April 4 - 6, 2008, Alabama, Huntsville, USA.
- "Exploring the impact of mobility in wireless sensor network", Oak Ridge National Laboratory, September 25, 2006, Tennessee, Oak Ridge, USA.
- "Exploring the impact of mobility in wireless sensor network — progress and experimental results", Oak Ridge National Laboratory, December 20, 2006, Tennessee, Oak Ridge, USA.
- "Text-to-Speech synthesis for Mandarin Chinese", Midwest Instruction and Computing Symposium, April 11-12, 2003, Minnesota, Duluth, USA.

**Awards and Honors:**

- Upsilon Pi Epsilon (UPE) International Honor Society for the Computing Sciences (2008)
- Best Graduate Teaching Assistant Award (2006)
- SARIF Summer Graduate Research Assistantship (2004, 2007)
- International Student Endowment Fund Scholarship (1999 to 2001)
- Dean's List, Minnesota State University (1998 to 2001)

**Technical Skills:**

- **Programming:** Java, JDBC, NesC, C/C++, eMbeddedVB/C++, VB, Perl, Python, JSP, ASP, SQL, PL/SQL, XML, WML, and Assembly for IBM80x86
- **Applications:** L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, Player/Stage, Matlab, R, WEKA, Oracle, MySQL, Orion server, Microsoft Office, and other common productivity packages for Windows and Linux platforms
- **Operating Systems:** Microsoft Windows CE/XP, TinyOS and Linux

**Service:****Paper reviewing:**

- Sensors (ISSN 1424-8220), 2010
- IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS), 2006, 2008, 2009, 2010
- IEEE International Conference on Robotics and Automation (ICRA), 2006 to 2007
- IEEE Intelligent Systems, 2006
- Journals of Robotics and Autonomous Systems (JRAS) 2005

**Distributed Intelligence Laboratory, University of Tennessee:**

- Tour for Tennessee Junior Science & Humanities Symposium (2010)
- Robot demonstration for NSF campus tour (2008)
- Robot demonstration for local middle school and high school students (2005-2010)
- Maintain and update autonomous robots' operating systems, software and hardware
- Provide training for new students
- Maintain a Wiki-based laboratory manual

**Others:**

- United Way fund allocation committee, Knoxville (2005 to 2008)
- President of Chinese Student and Scholar Association, MNSU (2001)
- Director of Activities of International Student Association, MNSU (2000)
- Peer Leader for Intentional Student Orientation, MNSU (2000)
- Vice President of Taiwan Student Association, MNSU (1999)

**Professional Organizations:**

- ACM Member
- IEEE Student Member

**Personal:**

- **Gender:** Female
- **Citizenship:** P.R. China
- **Languages:** English and Chinese (Mandarin)

## References:

Dr. Lynne E. Parker  
IEEE fellow,  
Professor,  
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