

LINGE BAI

Department of Computer Science
Drexel University
3141 Chestnut Street
Philadelphia, PA 19104

lb353 AT cs DOT drexel DOT edu
<http://www.cs.drexel.edu/~lb353>

EDUCATION

Ph.D.: Computer Science Drexel University, Philadelphia, PA	GPA 3.81/4.0	In Progress
M.S.: Computer Science Drexel University, Philadelphia, PA	GPA 3.77/4.0	September 2008
THESIS - Self-Organizing Primitives for Automated 2D Shape Composition		
B.E.: Computer Science and Technology Wuhan University, Hubei, China	GPA 88.0/100	June 2006

RESEARCH INTERESTS

- Morphogenesis Simulation:
 - Simulating development of shapes and structures from simple cells under multiple mechanisms of morphogenesis (i.e. chemotaxis, durotaxis, haptotaxis, proliferation and apoptosis).
- Self-Organizing Systems:
 - Discovering microscopic local interaction rules of primitives that lead to predefined macroscopic global behaviors.
 - Designing algorithms to engineer a self-organizing system and using such algorithms to solve real world problems.
- Complex Systems:
 - Modeling, understanding, analyzing and engineering complex systems.
- Emergent Behaviors:
 - Understanding how simple agents aggregate into complex global structures based on local interactions and stigmergic communication.

PUBLICATIONS

- L. Bai, D. Breen, “Calculating Center of Mass in a Toroidal Environment,” *Journal of Graphics Tools*, Vol 13. No. 4, pp. 53 – 60.
- L. Bai, M. Eyiurekli, D. Breen, “An Emergent System for Self-Aligning and Self-Organizing Shape Primitives,” *Proceedings of 2nd IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO)*, pp. 445 – 454, Venice, Italy, October 2008.
- L. Bai, “Self-Organizing Primitives for Automated 2D Shape Composition,” M.S. Thesis, Drexel University, Philadelphia, PA, August 2008.
- L. Bai, M. Eyiurekli, D. Breen, “Automated Shape Composition Based on Cell Biology and Distributed Genetic Programming,” *Proceedings of Genetics and Evolutionary Computation Conference (GECCO)*, pp. 1179 – 1186, Atlanta, GA, July 2008.
- L. Bai, M. Eyiurekli, D. Breen, “Self-Organizing Primitives for Automated Shape Composition,” *Proceedings of IEEE International Conference on Shape Modeling and Applications (SMI)*, Stony Brook, NY, pp. 147 – 154, June 2008.

RESEARCH EXPERIENCE

Research Assistant, *Drexel Geometric Biomedical Computing Group* September 2006 - Present
Department of Computer Science, Drexel University, Philadelphia, PA

- NSF project on Self-Organizing Shapes.
 - Conduct research in self-organizing behaviors of biological systems, especially cell biology.
 - Develop new, organic approaches to geometric modeling based on self-organizing primitives.
 - Apply genetic programming to discover local interaction rules of chemotaxis-based cell models.
 - Implement distributed genetic programming framework for chemotaxis-based cell simulations.
 - Develop algorithms for calculating the center of mass in a toroidal environment.
- NSF project on Interactive Level Set Modeling. July 2008 - December 2008
 - Developed GUI with Qt for editing an interactive level set model.
- Machine learning and its application. June 2008 - December 2008
 - Implemented K -means clustering of shape distribution extractions from breast cancer images.
 - Implemented naive Bayes classifier for user input document classification.

TEACHING EXPERIENCE

Teaching Assistant, *Computer Science* September 2006 - March 2009
Department of Computer Science, Drexel University, Philadelphia, PA

- Assisted in graduate computer graphics courses.
- Assisted in graduate and undergraduate database courses.
- Instructed undergraduate C++ programming labs.
- Instructed undergraduate Alice (3D animation software) labs.

AWARDS

- Fellowship for the 8th International Biocomplexity Summer School sponsored by the NSF, July 2009.
- Genetic and Evolutionary Computation Conference (GECCO) Student Travel Award, August 2008.
- IEEE International Conference on Shape Modeling and Applications (SMI) Student Travel Award, June 2008.

TECHNICAL SKILLS

- Programming Languages:
C, C++, BASH shell scripting, Perl, Python, L^AT_EX, SQL, HTML.
- Software Libraries:
OpenGL, ImageMagick, GSL, Open Beagle Evolutionary Computation.
- Software:
MATLAB, Qt, Alice.
- Operating Systems:
Mac OS X, Unix, Windows 2000/Me/XP.