

SHENGYIN GU

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OBJECTIVE AND SUMMARY

Seeking a full-time software engineering or research scientist position related to computer vision, shape modeling, visualization and/or geometric computing for computer graphics. Strong analytical ability, problem solving skills, and extensive programming experience. Excellent communication skills. Solid work ethic and ability to perform under pressure. A quick learner.

COMPUTER SKILLS

Primary programming languages: C++, Java,

Other programming languages: C, Python, Matlab, SQL, HTML/Javascript.

Libraries, IDEs and tools: OpenGL, JOGL, Qt, Prefuse, STL, Visual Studio, Qt creator, Eclipse, Git and SVN

Database experience: MySQL, Oracle, and SQLite.

Development environment: Windows and Linux.

EDUCATION

Ph.D. in Computer Science

Expected graduation: Spring 2011

M.S., Computer Science

Graduated: 2008

UC Davis, Davis, CA

GPA: 3.89/4.0

B.S., Double-major in Computer Science & Economics

Graduated with highest honors: 2003

Rutgers University, New Brunswick, NJ

GPA: 3.88/4.0

EMPLOYMENT

Institute for Data Analysis and Visualization, UC Davis

Summer 2005 – Present

Graduate Research Assistant

- Designed a novel protein docking algorithm and its associated tool for biologists to predict potential docking sites. Protein docking prediction is the key factor in drug design. Programmed the efficient back-end algorithm using C++ and front-end 3D interactive visualization using OpenGL and Qt.
- Designed a novel algorithm to generate ensembles of patches of low-energy configurations for a given protein. The ensembles improve the accuracy of flexible protein docking which is the most difficult case in the docking problem. Programmed the algorithm in C++ and Matlab.
- Unearthed fossils have often been distorted during fossilization. Designed and developed a closed-form algorithm to restore symmetry of deformed fossils. The algorithm was modeled and tested on theoretical cases in Mathcad and Matlab, then applied to fossils such as *T. rex's* vertebrae and monkey skulls.
- Analyzed amino-acid properties to develop meaningful 3D amino acid feature vectors. Modeled protein sequences using the vectors to facilitate the discovery of structural information. Programmed the back-end algorithm in Java and front-end 3D visualization in JOGL and Java.
- Collaborated weekly with scientists from multiple disciplines and institutes to devise algorithms, discuss results, write and publish papers.

Google Research, Google Inc.

Summer 2009

Software Engineering Intern

- Applied machine-learning algorithms to organize and represent users' Google web histories. The project enables potential applications such as behavioral targeting in advertising, and representing user history in the browser.
- Designed and programmed the back-end algorithm in Python and a front-end display using HTML/Javascript.
- Submitted a patent application titled "Generating Action Trails from Web History" (pending).
- Collaborated and published a paper with colleagues from UNC-Chapel Hill and Google Research.

Yahoo! Inc.

Summer 2008

Platform Engineering Intern

- Created a visualization tool, using Java and Prefuse API, to layout a force-directed graph representing the relationships of publishers, advertisers and networks.
- Discovered problems and inefficiencies in the Right Media ad exchange.

Lawrence Berkeley National Laboratory

Fall 2006 – Summer 2007

Junior Research Specialist

- Designed and implemented an interactive exploratory tool, using Java, for displaying gene annotations in the context of phylogeny. Traits can be interactively queried from a user-provided database with a user-friendly interface which provides a set of tools for users with or without SQL knowledge.

Department of Computer Science, UC Davis

Fall 2004 – Spring 2005

Teaching Assistant

- Taught computer science undergraduates C programming and Linux commands.
- Tutored students during lab sessions and office hours.
- Graded homework and exams.

Graduate School of Education, Rutgers University

Winter 2001 – Spring 2003

Undergraduate Research Assistant

- Designed computer-based tools to teach middle school students environmental awareness and research methodology.
- Implemented and maintained the software in visual basic (VB) and visual basic for application (VBA).

Merck & Co., Inc.

Summer 2001

Software Engineering Intern

- Designed and developed visual basic (VB) programs to consolidate multiple databases into a single coherent system.

PUBLICATIONS

- Gu, S., Koehl, P. and Amenta, N. (in preparation). Surface-Histogram for Protein-Protein Docking.
- Francis-Lyon, P., Gu, S., Hass, J., Amenta, N. and Koehl, P. (2010). Sampling the Conformation of Protein Surface Residues for Flexible Protein Docking, *BMC Bioinformatics*.
- Pedersen, E., Gyllstrom, K., Gu, S. and Hong, P. (2010). Automatic Generation of Research Trails in Web History. *International Conference on Intelligent User Interfaces (IUI)*.
- Kazhdan, M., Amenta, N., Gu, S., Wiley D. and Hamann, B. (2009). Symmetry Restoration by Stretching. *Canadian Conference on Computational Geometry (CCCG)*.
- Gu, S., Poch, O., Hamann B. and Koehl, P. (2007). A Geometric Representation of Protein Sequences. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*.
- Gu, S., Anderson, I., Kunin, V., Cipriano, M.J., Minovitsky, S., Weber, G.H., Amenta, N., Hamann, B. and Dubchak, I.L. (2007). TreeQ-VISTA: An Interactive Tree Visualization Tool with Functional Annotation Query Capabilities. *Bioinformatics*.

AWARDS AND HONORS

Selected to participate in 2009 Google Workshop for Women Engineers	2009
Selected to join "The National Society of Collegiate Scholars"	
Winner of the "International Student Scholarship", Rutgers University	2002-2003
Winner of the Dean's Award for Excellence, Rutgers University	2001

More information about my projects can be found at <http://graphics.cs.ucdavis.edu/~shengyin>