

Curriculum Vitae

Justin Allen Bradford

1317 4th Ave Apt 1
San Francisco, CA, 94122
jabradford@gmail.com
(415) 336-8462

Education

PhD Biophysics – 2008,
University of California - San Francisco, San Francisco, CA.
Thesis: Adaptive, functional organization of simple, non-intelligent agents. Advisor: Ken Dill.

BS Biochemistry – 1999,
University of Kansas, Lawrence, KS.
Graduated with School Honors and Highest Distinction (4.0/4.0 GPA).
GRE scores: Verbal: 780; Quantitative: 720; Analytical: 780.

Honors and Fellowships

National Science Foundation Graduate Research Fellowship, 2001–2004.
Undergraduate Research Fellowship, University of Kansas, 1999.
University Scholar, University of Kansas, 1997.

Employment

- Genentech. Information Systems consultant, SF, CA, 2005–2007.
Research, design, and development of data mining and text retrieval systems for academic and business resources, including UI and visualization components. Supervisor: Carol Morita.
- Genentech. Bioinformatics consultant, SF, CA, 2000–2002.
Design and development of bioinformatics tools and infrastructure. Supervisor: Kevin P. Clarke.
- Genentech. Undergraduate Internship, San Francisco, CA, Summer, 1999.
Bioinformatics support for protein chemistry. Supervisor: Kevin P. Clarke.
- Independent consulting for website development, 1997–1999.
Developed several sites and web applications, primarily using ColdFusion and Perl. Browsing, searching, and management web interface for legacy databases. Simple intranet for employee collaboration and communication. Custom online stores for established mail order businesses. Interactive web applications to complement static, informational websites.
- University of Kansas, Center for Research on Learning. Student programmer, Lawrence, KS, 1996–1999.
Lead developer of educational web applications and resources. Major role in server, network, and database administration for organization.

Academic Research

Doctoral thesis research (2001–2008): Studying the adaptive self-organization of simple components into self-sustaining functional networks using theoretical models. The primary focus was on pre-biotic chemical organization and evolution, with a secondary focus on general engineering applications.

- Studying secondary structure packing in small proteins.
PI: Tack Kuntz, UCSF, Spring, 2001.
- Optimization of force field parameters using protein structure “decoys.”
PI: Ken Dill, UCSF, Winter, 2001.
- Implementation of a Generalized Born solvation model in the AMBER molecular dynamics package.
PI: Peter Kollman, UCSF, Fall, 2000.
- Studying conformational dynamics of small peptides using fluorescent anisotropy techniques.
PI: Carey Johnson, University of Kansas, 1999.

Computer Expertise and Experience

Multi-platform GUI application development.

System & database administration.

Network service (daemon) application development.

Database-driven website development.

Custom UI and visualization development for data-intensive systems.

High-level proficiency with numerous programming and markup languages and APIs:

C/C++, Java, Python, Ruby, Perl, D, Io, PHP, Fortran, Javascript, ColdFusion, HTML, CSS, Win32 API, MacOS Carbon, GTK, wxWidgets.

Significant contributions to several cross-platform open source projects, including:

SOCKS proxy support for Mozilla/Firefox, proxy subsystem for Putty (SSH client), and layout, graphics, and Word document import for Abiword (word processor).

Teaching Experience

Teaching Assistant, Statistical Molecular Thermodynamics, UCSF, 2001.

Primary Lecturer, Informal Lecture Series on Molecular Biology, University of Kansas, 1999.

Teaching Assistant, Organic Chemistry Laboratory, University of Kansas, 1999.

Other Expertise and Experience

Practical knowledge and application of various fields of mathematics, physics, and engineering, including information theory, probability theory, game theory, graph theory, and set theory.

Data mining, text retrieval, and concept-relationship structures.

Numerical and analytical modeling, including agent-based simulations and theory.

Evolutionary theory and algorithms.

Publications

Bradford JA & Dill KA (2007) Stochastic innovation as a mechanism by which catalysts might self-assemble into chemical reaction networks. *Proceedings of the National Academy of Science*. (104:10098-10103)

Bradford JA (2008) "Stochastic innovation: functional organization of simple, non-intelligent agents." UCSF doctoral thesis.