

## TJ Brunette

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Molecular Engineering and Sciences  
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### RESEARCH INTERESTS

Protein design, high performance computing, bio-material design, optimization, and robotics.

### EDUCATION

**University of Washington** Seattle, WA  
Senior Fellow in Biochemistry 2011-  
**Research:** 2013- De-novo protein design of repeat proteins, 2011-2013 Structure prediction  
**Advisor:** David Baker

**University of Massachusetts at Amherst** Amherst, MA  
Ph.D. in Computer Science May 2011  
**Title:** Adaptive Balancing of Exploitation with Exploration to Improve Protein Structure Prediction  
**Research:** Developed high dimensional search techniques that improved protein structure prediction. These techniques were motivated by concepts from robot motion planning.  
**Advisor:** Oliver Brock

**State University of New York at Geneseo** Geneseo, NY  
B.S. in biochemistry, minor in computer science May 1999

### PUBLICATIONS

TJ Brunette\*, Fabio Parmeggiani\*, Po-Ssu Huang\*, Gira Bhabha, Damian C. Ekiert, Susan E. Tsutakawa, Greg L. Hura, John A. Tainer and David Baker **Exploring the repeat protein universe through computational protein design** Accepted to Nature 8/26/2015

Summer Thyme, Yifan Song, TJ Brunette, Mindy Szeto, Lara Kusak, Philip Bradley and David Baker **Massively Parallel Determination of Endonuclease Substrate Specificity** Nucleic Acids Research 42(22) November 2014

Yifan Song, Frank DiMaio, Ray Wang, David Kim, Chris Miles, TJ Brunette, James Thompson and David Baker **High resolution comparative modeling with RosettaCM** Structure, Volume 21 Issue 10 p.1735-1742, October 2013

Brunette, TJ **Adaptive balancing of exploitation with exploration to improve protein structure prediction** UMass Amherst Thesis, May 2011

Brunette, TJ and Oliver Brock. **Guiding conformation space search with an all-atom energy potential.** Proteins: Structure, Function, and Bioinformatics 73(4):958-972, December 2008

Brunette, TJ and Oliver Brock. **Improving protein structure prediction with model-based search.** Bioinformatics 21(Suppl. 1):66-74, Special Issue for the International Conference on Intelligent Systems for Molecular Biology (ISMB), Detroit, June 2005

Sweeney, J., Brunette, TJ, Yang, Y. Grupen, R. **Coordinated teams of reactive mobile platforms**, in the Proceedings of the IEEE Conference on Robotics and Automation, Washington, D.C. May 2002

#### **GRANTS CO-WRITTEN**

2015 **80 million core hours per year at Argonne National Laboratory** awarded to David Baker

2013 **140 million core hours per year at Argonne National Laboratory** awarded to David Baker

2011 **30 million core hours per year at Argonne National Laboratory** awarded to David Baker

2009 **Predicting Protein Structure with Guided Conformation Space Search** NIH R01 awarded to Oliver Brock

#### **TEACHING EXPERIENCE**

**University of Massachusetts at Amherst**

Amherst, MA

*Teaching Assistant*

Taught discussion sections, graded and held office hours

CMPSCI 201: Computer architecture and assembly language

CMPSCI 121: Introduction to problem solving with computers

CMPSCI 105: Computer literacy