

**Benjamin J Hescott**

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**Professional Preparations**

Boston University	Computer Science	Ph.D. 2008
Boston University	Mathematics	B.A. 1999

**Appointments**

Tufts University	Assistant Professor, Department of Computer Science	2011–
	Senior Lecturer, Department of Computer Science	2010-2011
	Research Assistant Professor, Department of Computer Science	2009-2011
	Lecturer, Department of Computer Science	2007-2010
Boston University	Lecturer, Department of Computer Science	2003-2004

**Honors**

Recognition of Undergraduate Teaching Excellence Award, (ROUTE), Tufts University, 2016

Professor of the Year, Tufts Student Body, Tufts Community Union Senate, Tufts University, 2016

Tufts Graduate Student Council Award for Outstanding Faculty Contribution to Graduate Studies, Tufts University, 2013

The Henry and Madeline Fischer Award, School of Engineering, Tufts University, 2012

The Lillian and Joseph Leibner Award for Excellence in Teaching and Advising, Tufts University, 2012

The Lerman-Neubauer Prize for Outstanding Teaching and Advising, Tufts University, 2011

Computer Science and Engineering Undergraduate Teaching Award, The Institute of Electrical and Electronics Engineers (IEEE), 2011

## Refereed Journal Publications

- B. Hescott, and R. Khardon, "The Complexity of Reasoning with FODD and GFODD", *Artificial Intelligence* 229(2015):1-32
- G. Barequet, S. Cannon, E. Fox-Epstein, B. Hescott, D. Souvaine, C. Tóth, and A. Winslow, "Diffuse Reflections Diameter in Simple Polygons", *Discrete Applied Mathematics*, (2015)
- B. Hescott, C. Malchik, and A. Winslow. "Tight Bounds for Active Self-Assembly Using an Insertion Primitive." *Algorithmica* (2014):1-18
- R. Crouser, B. Hescott, and R. Chang, "Toward Complexity Measures for Systems Involving Human Computation", *Journal of Human Computation* 1(1)(2014)
- M. Cao, C. Pietras, X. Feng, K. Doroschak, T. Schaeffer, J. Park, H. Zhang, L. Cowen and B. Hescott, "New Directions for Diffusion-Based Network Prediction of Protein Function: Incorporating Pathways with Confidence", *Bioinformatics*, 30(12):i219-i227, (2014),
- M. Cao, H. Zhang, J. Park, N. Daniels, M. Crovella, L. Cowen and B. Hescott, "Going the distance for protein function prediction", *PLoS One*, 8 (10) (2013)
- A. Gallant, M.D.M. Leiserson, M. Kachalov, L. Cowen, and B. Hescott, "Genecentric: A package to uncover graph-theoretic structure in high-throughput epistasis data", *BMC Bioinformatics*, 14 (23) (2013)
- M. Leiserson, D. Tatar, L. Cowen and B. Hescott, "Inferring Mechanisms of Compensation from E-MAP and SGA Data Using Local Search Algorithms for Max Cut", *Journal of Computational Biology*, 18 (11) (2011), 1399-1409
- A. Fox, B. Hescott, M. Pellegrini, A. Blumer, and D. Slonim, "Connectedness of PPI Network Neighborhood Identifies Regulatory Hub Proteins", *Bioinformatics*, 27 (8) (2011), 1135-1142
- H. Buhrman, B. Hescott, S. Homer and L. Torenvliet, "Non-uniform Reductions", in *Theory of Computing Systems*, 47 (2) (2010), 317-341.
- B. Hescott, M.D.M. Leiserson, L. Cowen, and D. Slonim. "Evaluating Between-Pathway Models with Expression Data", *Journal of Computational Biology*, 17 (3) (2010), 443-457

## Refereed Conference Talks and Publications \* - denotes journal version appears above

- J. Park, B. Hescott, and D. Slonim. "Towards a More Molecular Taxonomy of Disease", In submission to *Bio Ontologies at International Conference on Intelligent Systems for Molecular Biology* (2016)

- I. Fried, A. Cannistra, C. Carter, A. Piel, M. Crovella, and B. Hescott, "CANDL:Coarsely Aligning Networks with Diffusion and Landmarks". *International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Late Breaking Research, 2015
- \* B. Hescott and R. Khardon, "The complexity of reasoning with FODD and GFODD", *Association for the Advancement of Artificial Intelligence (AAAI) Conference on Artificial Intelligence*, July 2014 (Acceptance rate  $\frac{398}{1406} = 28\%$ )
  - \* M. Cao, C. Pietras, X. Feng, K. Doroschak, T. Schaeffer, J. Park, H. Zhang, L. Cowen and B. Hescott, "New Directions for Diffusion-Based Network Prediction of Protein Function: Incorporating Pathways with Confidence", *International Conference on Intelligent Systems for Molecular Biology*, 2014 (Acceptance Rate  $\frac{37}{191} = 19\%$ )
  - \* G. Barequet, S. Cannon, E. Fox-Epstein, B. Hescott, D. Souvaine, C. Tóth, and A. Winslow, Diffuse Reflections in Simple Polygons, *The VII Latin-American Algorithms, Graphs and Optimization Symposium (LAGOS) 2013* (44):345-350, (Acceptance Rate  $\frac{60}{131} = 46\%$  )
  - \* M. Leiserson, D. Tatar, L. Cowen and B. Hescott, "Inferring Mechanisms of Compensation from E-MAP and SGA Data Using Local Search Algorithms for Max Cut", *Research in Computational Molecular Biology (RECOMB) 2011* (Acceptance Rate  $\frac{43}{153} = 28\%$ ), Full version in *Journal of Computational Biology*
  - \* B. Hescott, M.D.M. Leiserson, L. Cowen, and D. Slonim. "Evaluating Between-Pathway Models with Expression Data", *Research in Computational Molecular Biology (RECOMB) 2009*. (Acceptance Rate  $\frac{37}{166} = 22\%$ ), Full version in *Journal of Computational Biology*

## Posters and Technical Reports

- J. Finkelstein and B. Hescott. "Polynomial-time Kernel Reductions", arXiv, <http://arxiv.org/abs/1604.08558>, 2016
- K. Moran, K. Claypool, and B. Hescott. "CompositeMatch: Detecting N-ary Matches in Ontology Alignment", *Ontology Matching*, 2009
- B. Hescott, and D. Koulomzin. "On clustering images using compression", Boston University Computer Science Department, Technical Report, 2006

### **Master's Theses Advised**

Inbar Fried, "Evaluating Validation Techniques for Biological Network Alignment", May 2015

### **Undergraduate Senior Theses Advised**

Taher Mun, "Using Graph Topology to Differentiate Between Gene Co-expression Networks", May 2016

Thomas Schaffner, "Usage of Semantic Similarity Measurements", May 2016

Greg Bodwin, "An Efficient Algorithm for Testing Epsilon-Approximate Core Membership in Negotiation Games", 2013

Samuel Haney, "Limited Nondeterminism and NC", 2013

Sarah Cannon, "Tile Self-Assembly Simulations Senior Honors Thesis", 2012

Constantin Berzan, "An Exploration of Structure Learning in Bayesian Networks", 2012

Mark Leiserson, "Inferring Mechanisms of Compensation from E-MAP and SGA Data Using Local Search Algorithms for Max Cut", 2011

Joseph Burnett, "Discovering and Searching Loosely Coupled Subproblems in Dou Shou Qi", 2010

Jeffrey Finklestein, "On the computational complexity of equivalence relations under kernel reductions", 2010

Marwan al Jubéh, "Paths Around Obstacles", 2010

Daniel Malmer, "Detecting Between Pathway Model Conservation across *S. cerevisiae* and *S. pombe* yeast species", 2010

Kelley Moran, "CompositeMatch: Detecting N-Ary Matches in Ontology Alignment", 2009

Adam Raczkowski, "Three Types of Randomness", 2009

### **External Awards to Students Under My Supervision**

Jennifer Hammelman, Honorable Mention, Computing Research Association Outstanding Undergraduate Award, 2016

Thomas Schaffner, Honorable Mention, Computing Research Association Outstanding Undergraduate Award, 2016

Gregory Bodwin, Honorable Mention, Computing Research Association Outstanding Undergraduate Award, 2013

Mark Leiserson, National Science Foundation Graduate Research Fellow, 2012

Constantin Berzan, Honorable Mention, Computing Research Association Outstanding Undergraduate Award, 2012

Sarah Cannon, Female Awardee Computing Research Association Outstanding Undergraduate Award, 2012

Mark Leiserson, Runner up for Computing Research Association Outstanding Undergraduate Award, 2011

### **Invited Talks**

“Moving Beyond Local Patterns: New Ways to Reason about Biological Network Comparisons”, Algorithmic Challenges in Genomics, Network Biology Workshop, Simons Institute for Theory of Computing, (<https://simons.berkeley.edu/talks/ben-hescott-04-13-16>), 2016

“Moving Beyond Local Patterns: New Ways to Reason about Biological Network Comparisons”, Computation and Biology Group, Computer Science and AI Lab, MIT, 2016

“Going the distance for protein function prediction”, Department of Computer Science, Williams College, 2014

“Discovering compensatory pathways in yeast”, Department of Mathematics, Boston University, 2013

“Finding the Max Cut of the Genetic Interactions Graph in Yeast Finds Compensatory Pathway”, Discrete Mathematical Biology Workshop, SIAM Discrete Math Conference, 2012

“Graph Cuts in Biological Networks”, INFORMS Annual Meeting, 2011

### **Research Support**

Tufts Institute for Innovation, co-PI with Thomas Stopka, \$250,000, “Tufts Responds to the Epidemics of Addiction and Hepatitis C Together, (Tufts REACTs)”, 2015-2016. Partial summer funding and funding for two computer science students.

Tufts Collaborates! program, co-PI with Olaf Damman, \$49,769, “Computational Population Model of Retinopathy of Prematurity”, 2014-2015. Partial summer funding for PIs and one year of a graduate student researcher.

Tufts Innovates! program, co-PI with PI Norman Ramsey \$42,222, "Jumbo ML: Smoothing the Path Toward Mastery of Modules", 2013-2014. Partial summer funding for PIs.

NSF, PI, \$29,198 "Strengthening and Expanding the Empowering Leadership Alliance", CNS-0940478, 2010-2012. Funded 5 undergraduate women in research.

### **Service at Tufts**

IT Governance Sub-Committee on Teaching and Learning, (SCTL), 2015 - present

Large Lecture Consortium Member, Center for Enhancement of Learning and Teaching (CELT), 2014 - present

Dean of Student Affairs Judiciary Panelist, 2012 - Present

Faculty Supervisor, Tufts Student ACM Chapter, (Tufts CSX), 2009 - present

Undergraduate Admissions Coordinator, Department of Computer Science, 2008 - present

Undergraduate Awards, Department of Computer Science, 2008 - present

Residential Strategy Working Group, (RSWG), 2015 - 2016

STEM Faculty Learning Community Member, Center for Enhancement of Learning and Teaching (CELT), 2014 - 2015

Faculty Fellow, Center for Enhancement of Learning and Teaching (CELT), 2009 - 2010

Alcohol Policy Task Force, 2009

Undergraduate Curriculum Committee, Department of Computer Science, 2007 - 2011

Outcomes and Assessment Committee, School of Engineering, 2008 - 2009

### **Outside Service**

National Science Foundation Panelist, 2016

External Examiner, Department of Computer Science, University of the West Indies, 2016

Program Committee Member, International Conference on Intelligent Systems for Molecular Biology ISMB 2016

Program Committee Member, International Conference on Intelligent Systems for Molecular Biology ISMB 2015

Program Committee Member, ACM Conference on Bioinformatics and Computational Biology (ACM BCB), 2013

Awards Committee, IEEE Computer Society, 2011-present

Organizing Committee, New England Undergraduate Computing Symposium, 2009-present

Member, Empowering Leadership Alliance (ELA), 2009-present

IDEAL Certified Assessment Leader, ABET, 2008

### **Reviews for Conferences**

Research in Computational Molecular Biology (RECOMB)

International Conference on Intelligent Systems for Molecular Biology (ISMB)

ACM Conference on Bioinformatics and Computational Biology (ACM BCB)

Computational Complexity Conference(CCC)

### **Reviews for Journals**

Nucleic Acids research

Bioinformatics

ACM Transactions on Computing Education

Journal of Computational Biology

Journal of Combinatorial Optimization

BMC Systems Biology