



Robert Patro

Current Research Interests

Algorithms for Inferring and Comparing Biological Networks
Network Evolution
Systems Biology

Education

- 2006–Present **Ph.D candidate, Computer Science**, University of Maryland, College Park, MD, GPA 4.0.
Advisor – Prof. Carl Kingsford
- 2003–2006 **BS, Computer Science**, University of Maryland, College Park, MD, GPA 3.95.
Cum Laude and *Departmental Honors*
- 2002 **Attended**, Worcester Polytechnic Institute, Worcester, MA, GPA 3.92.

Employment

- 2007–Present **Graduate Research Assistant**, Department of Computer Science, University of Maryland.
- 2006–2007 **Graduate Teaching Assistant**, Computer Graphics (CMSC 427).
- 2004–2006 **Software Engineering Intern**, NOAA, Silver Spring, MD.
- 2005 **Undergraduate Teaching Assistant**, Advanced Data Structures (CMSC 420).
- 1998 **Software Development Intern**, Honeywell, Columbia, MD.

Publications

Papers

- Rob Patro and Carl Kingsford. Global Network Alignment using Multiscale Spectral Signatures. 2012. Under Review, <http://hdl.handle.net/1903/12160>.
- Rob Patro, John P. Dickerson, Sujal Bista, Satyandra Gupta, and Amitabh Varshney. Speeding Up Particle Trajectory Simulations under Moving Force Fields using GPUs. *ASME Journal of Computing and Information Science in Engineering*, 2012. To Appear.
- Andre Maximo, Rob Patro, Amitabh Varshney, and Ricardo Farias. A Robust and Rotationally Invariant Local Surface Descriptor with Applications to Non-local Mesh Processing. *Graphical Models*, 73(5):231–242, 2011.
- Rob Patro, Cheuk Yiu Ip, Sujal Bisat, and Amitabh Varshney. Social Snapshot: A System for Temporally Coupled Social Photography. *IEEE Computer Graphics and Applications*, 31:74–84, 2011.
- Rob Patro, Cheuk Yiu Ip, Sujal Bista, Samuel Cho, Dave Thirumalai, and Amitabh Varshney. MDMap : A System for Data-driven Layout and Exploration of Molecular Dynamics Simulations. In *Proceedings of the 1st IEEE symposium on biological data visualization*, Providence, RI, USA, 2011.
- Rob Patro, Emre Sefer, Justin Malin, Guillaume Marçais, Saket Navlakha, and Carl Kingsford. Parsimonious Reconstruction of Network Evolution. In *Algorithms in Bioinformatics*, volume 6833 of *Lecture Notes in Computer Science*, pages 237–249. Springer Berlin / Heidelberg, 2011. (Invited journal version under review at *Alg. Mol. Biol.*).

Youngmin Kim, Rob Patro, Cheuk Yiu Ip, Andriy Anishkin, Sergei Sukharev, Dianne P. O' Leary, and Amitabh Varshney. Salient Frame Detection for Molecular Dynamics Simulations. In Hans Hagen, Eduard Groeller, David Ebert, and Arie Kaufman, editors, *Scientific Visualization: Advanced Concepts*. Schloss Dagstuhl–Leibniz Center for Informatics, 2010.

Rob Patro, Cheuk Yiu Ip, and Amitabh Varshney. Saliency Guided Summarization of Molecular Dynamics Simulations. In Hans Hagen, editor, *Scientific Visualization: Advanced Concepts*, volume 1 of *Dagstuhl Follow-Ups*, pages 321–335. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, Dagstuhl, Germany, 2010.

Aswin C. Sankaranarayanan, Rob Patro, Pavan Turaga, Amitabh Varshney, and Rama Chellappa. Modeling and visualization of human activities for multicamera networks. *EURASIP Journal on Image and Video Processing*, vol. 2009(Article ID 259860), 2009.

Invited Talks & Posters

Rob Patro and Carl Kingsford. Learning from Diversity: Epitope Prediction with Sequence and Structure Features using an Ensemble of Support Vector Machines, 2010. Winner, DREAM5 Challenge 1 Competition. Presented at RECOMB Systems Biology Satellite Conference.

Adam Phillippy, Michael Schatz, Timur Chabuk, Bo Liu, Rob Patro, and Steven Salzberg. Improving the Genome Sequence of *D. simulans* via Co-assembly of Multiple Strains. *Biology of Genomes*, May 2009. (poster).

Awards & Honors

2010 **1st Place**, *DREAM 5 Challenge 1*.

2010 **Goldhaber Travel Grant**, \$250.

2009 **i3D Student Stipend Award**, \$800.

2007–2008 **Verizon Fellowship Recipient**, \$2000.

2006–2008 **Block Fellowship**, *Department of Computer Science*, University of Maryland.

2006 **Computer Science Departmental Honors**, *University of Maryland*.

2006 **CMPS Honors Graduate**, *University of Maryland*.

2003–2006 **Deans List**, *University of Maryland*.

2002 **Charles O. Thompson Scholar**, *Worcester Polytechnic Institute*.

Upsilon Pi Epsilon Honor Society for the Computing Sciences.

Phi Sigma Pi National Honors Fraternity.

Phi Kappa Phi National Honors Society.

National Society of Collegiate Scholars.

Golden Key National Honors Society.

Professional Activities

2011 **Workshop for Algorithms in Bioinformatics & Intelligent Systems for Molecular Biology**, *Reviewer*.

2010 **ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D) Publicity Co-Chair.**

2007–2009 **IEEE Visualization Conference**, *Reviewer*.

2007, 2008, 2010 **SIGGRAPH Conference**, *Reviewer*.

Skills

Expert C/C++, CUDA, GLSL, Java, \LaTeX , Matlab, OpenGL, Python, Ruby, Scala.

Experienced Haskell, OCaml, Perl, Prolog, Scheme .