

Tony Y. Chiang

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Citizenship

Dual - US (Naturalized) and Taiwan (Birth)

Employment

Postdoctoral Research Fellow (01 January 2011 - Present)

Environmental Genetics and Biological Oceanography
College of the Environment - School of Oceanography
University of Washington
Mentor: E. Virginia Armbrust

Affiliate Postdoctoral Research Fellow (01 January 2011 - Present)

Computer Science and Engineering
College of Arts and Sciences - School of Engineering
University of Washington
Mentor: W. Larry Ruzzo

Education

DPhil - Computational Biology, 2010
Kings College, University of Cambridge, United Kingdom
European Bioinformatics Institute
Dissertation Advisor - Wolfgang Huber

Graduate Student in Pure Mathematics
University of California, Berkeley, USA
Advisor - Mark D. Haiman

B.S. in Pure Mathematics, June 2001
Massachusetts Institute of Technology, Cambridge, MA, USA
Undergraduate Advisors - Gian-Carlo Rota, Richard Stanley

Research Interest

Computational Biology: Algorithms for Analyzing Genomic/Proteomic Data, Graph Theory in Biology, Graphical Models; Maths: Algebraic Combinatorics, Representation Theory, Combinatorial Probability Theory, q-Symmetric Function Theory.

Previous Research

Computational Biology - EBI
Doctoral Candidate

Cambridge, UK
15 October 2006 - 2010

Huber Group

- Analysis of Genomic/Proteomic Interaction Data
- Distance Learning Metric on Biological Data

Computational Biology - FHCRC

Seattle, WA, USA

Affiliate Research Associate

April 2005 - 2010

Gentleman Lab in Computational Biology. Research topics include:

- Simulation Models for Biological Experiments
- Statistical Models for PPI Data

University of California at Berkeley

Berkeley, CA, USA

Doctoral Student

2001-2004

Doctoral Student in Mark D. Haiman's group for algebraic combinatorics and representation theory.

Centre for Combinatorics, Nankai University

Tianjin, PRC

Visiting Scholar

Summer 1999

William YC Chen's group: Algebraic and Probabilistic Combinatorics.

Teaching

University of Cambridge

Cambridge, UK

Mathematics Tripos Supervisor - Part II

Michaelmas Term - 2007

Galois Theory (Ian Grojnowski)

UC Berkeley

Berkeley, CA, USA

Graduate Student Instructor

Spring 2004

Introduction to Complex Function Theory (A. Yong PhD)

UC Berkeley

Berkeley, CA, USA

Graduate Student Instructor

Spring 2004

Introduction to Abstract Algebra (Prof V. Serganova)

UC Berkeley

Berkeley, CA, USA

Graduate Student Instructor

Fall 2003

Introduction to Statistical Inference (Q. Pham PhD)

UC Berkeley

Berkeley, CA, USA

Graduate Student Instructor

Fall 2002, Fall 2003

Calculus I

Instructor - Prof V. Serganova (Fall 2002)

Instructor - Prof D. Tataru (Fall 2003)

Bio-Computing Software

- Interface Package between R and PSI MI-2.0XML (RpsiXML, 2008)
- Protein Interaction Meta-data Package (ppiData, 2006)
- Statistical Methods on Protein Interaction Package (ppiStats, 2006)

- *Saccharomyces cerevisiae* In Silico Interactome (ScISI, 2006)

Selected Talks

Computational Biology

- *Statistical Inference on Protein Interaction Graphs* Center for Cancer Systems Biology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, 2008
- *Feature Estimation in Biological Graphs* Biotechnology Centre of Oslo, Oslo, Norway 2008
- *RpsiXML - Communicating with Molecular Interaction Databases* HUPO-PSI Working Group Meeting, Toledo, Spain 2008
- *Coverage and Error Models on PPI Data by a Directed Graph Analysis* Mathematical and Statistical Aspects of Computational Biology, Manchester, UK 2007
- *Statistical Models on Protein Complex Alignments* Joint Statistical Meeting, Seattle, 2006
- *Constructing In Silico Interactomes* Bio-informatics Seminar, Northwestern Medical School, 2006

Mathematics

- *Littelman Path Crystals* Representation Theory and Combinatorics, UCB, 2004
- *Rigged Configurations and Affine Crystals* Representation Theory and Combinatorics, UCB, 2003
- *Hall-Littlewood vertex operators and generalized Kostka polynomials* Representation Theory and Combinatorics, UCB, 2003
- *Vertex operators for standard bases of the symmetric functions* Representation Theory and Combinatorics, UCB, 2002
- *Complexity Reduction for Gosper's Algorithm via the WZ Method* Lecture Series, Centre for Combinatorics, Nankai University, 1999

Awards and Honours

- King's College Studentship, King's College, Cambridge, 2008
- Overseas Research Scholarship (ORS) Fellow, University of Cambridge, 2008
- Ferris Fund, King's College, University of Cambridge, 2008
- NDSEG Graduate Student Fellowship Finalist, 2001
- NSF Graduate Student Fellowship Honourable Mention, 2001
- Paul Grey Fellowship for Undergraduate Research, MIT, 2000

- Nankai University International Student Fellow, Center for Combinatorics, Nankai University, 1999
- MIT Jack C Tang Fellowship, Massachusetts Institute of Technology, 1997 - 2001
- National Merit Scholarship, 1997

Skills

- Languages: English (Native), Mandarin Chinese
- Computer Skills: R, Mathematica, Unix, Linux, Mac OS X, L^AT_EX, HTML.

Publications

1. Tony Chiang, Denise Scholtens, Deepayan Sarkar, Robert Gentleman, Wolfgang Huber. *Coverage and Error Models on Protein-Protein Interaction Data by a Directed Graph Analysis*. Genome Biology, 2007.
2. Denise Scholtens, Tony Chiang, Wolfgang Huber, Robert Gentleman. *Estimating Node Degree in Bait-Prey Networks*. Bioinformatics, 2008.
3. Tony Chiang, Nianhua Li, Sandra Orchard, Samuel Kerrien, Henning Hermjakob, Robert Gentleman, Wolfgang Huber. *Rintact: enabling computational analysis of molecular interaction data from the IntAct repository*. Bioinformatics, 2007.
4. Tony Chiang, Denise Scholtens. *A General Pipeline for the Quality and Statistical Assessment of Protein Interaction Data Using R and Bioconductor*. Nature Protocols, 2009.
5. Jintao David Zhang, Marc Carlson, Florence Cavalli, Stefan Weimann, Tony Chiang. *RpsiXML: a programmatic interface between R and the PSI-MI2.0 Standardization for molecular interactions*. Submitted.
6. Tony Chiang. *On the Cayley Graph of Finitely Generated Abelian Groups*. Journal of Undergraduate Research, June 2001, MIT PRESS.