Jessica Su

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Education

- **Stanford University**   Palo Alto, CA
  PhD student, Computer Science   *September 2013 - present*
- **California Institute of Technology**   Pasadena, CA
  B.S., Computer Science (3.8 GPA)   *September 2007 - June 2013*

Publications

- Marcolli M and **Su J** (2011) Arithmetic of Potts Model Hypersurfaces. International Journal of Geometric Methods in Modern Physics, in press. arXiv:1112.5667 [math-ph].

- Liebovitch L, Peluso P, Norman M, **Su J**, Gottman J (2011) Mathematical model of the dynamics of psychotherapy. Cognitive Neurodynamics 1-11.

- Peluso P, Liebovitch L, Gottman J, **Su J** (2011) A mathematical model of psychotherapy: an investigation using dynamic non-linear equations to model the therapeutic relationship. Psychotherapy Research.

- Ward C, **Su J**, Huang Y, Lloyd A, Gould F, Hay B (2011) Medea selfish genetic elements as tools for altering traits of wild populations: a theoretical analysis. Evolution 65:1149-1162.

- Hay B, Chen CH, Ward CM, Huang H, **Su JT**, Guo M (2010) Engineering the genomes of wild insect populations: Challenges, and opportunities provided by synthetic Medea selfish genetic elements. Journal of Insect Physiology 56(10):1402-1413.

- Chen CH, Huang H, Ward CM, **Su JT**, Schaeffer LV, Guo M, Hay BA (2007) A synthetic maternal-effect selfish genetic element drives population replacement in Drosophila. Science 316:597-600.

Conferences

- M.D. Norman, L.S. Liebovitch, P.R. Peluso, **J. Su**, J.M. Gottman. Mathematical Model of the Dynamics of Psychotherapy. International Conference on Complex Systems, June 2011, Cambridge MA.

- L. S. Liebovitch, P. R. Peluso, **J. Su**, J. Gottman. 2010. Mathematical Model of Psychotherapy - A New Approach to Understanding the Therapeutic Relationship. Association for Psychological Science, May 29, 2010, Boston MA.

Research Experience

- **Marcolli Group, Caltech, Department of Mathematics**   Pasadena, CA
  Summer Undergraduate Research Fellow   *June 2011 - August 2011*
  - Used numerical and analytical methods to determine if Tutte polynomials satisfied the Kontsevich conjecture.

- **Tenenbaum Lab, MIT, Department of Brain and Cognitive Sciences**   Cambridge, MA
  Research Intern   *June 2010 - August 2010*
  - Ran computer-based experiments to explore how people learn new words.

- **Liebovitch Group, FAU, Complex Systems and Brain Sciences**   Boca Raton, FL
  Research Intern   *November 2009 - February 2010*
    - Used nonlinear differential equations to model therapist-client interactions.
    - Solved the equations of the model analytically.

- **Phillips Lab, Caltech, Department of Biology**   Pasadena, CA
  Summer Undergraduate Research Fellow   *June 2007 - August 2007*
    - Used a modified version of BLAST to search for motor proteins in bacteria.

- **Hay Lab, Caltech, Department of Biology**   Pasadena, CA
  Research Intern   *June 2006 - August 2006*
    - Modeled the dynamics of maternal-effect selfish genes.

Skills

- **Computer science classes:** CS 21 (theory of computation), CS 24 (systems), CS 38 (algorithms), CS 156ab (machine learning), CNS 187 (neural computation), CS 153 (lattices and convexity), CS 117 (computability theory), CS 151 (complexity theory), CS 121 (databases)

- **Math classes:** Ma 108ab (real analysis), Ma 5abc (abstract algebra), Ma 121 (combinatorics), ACM 116 (stochastic processes), ACM 101 (differential equations and dynamical systems)

- **Other classes:** Ph 12abc (waves, quantum mechanics, and statistical physics), EE 127 (error-correcting codes), BE 150 (systems biology)

- **Computer skills:**

    - Comfortable with: Python, MATLAB, Java, C, Unix, LaTeX
    - Have used before: Mathematica, Perl, C++, Objective-C, MySQL, Assembly

Work Experience

- **Protabit LLC**   Pasadena, CA
  Consultant   *June 2012 - September 2012*
    - Used bioinformatics tools to analyze the efficacy of protein design software.

- **Kaplan Test Prep and Admissions**   Boca Raton, FL
  Instructor   *July 2008 - March 2009*
    - Taught SAT preparation classes. Tutored individual students for the SAT and SAT II.

Awards

- Summer Undergraduate Research Fellowship (2011, 2007)

- Top 500 Putnam (2008)

- Lingle Scholarship (2007, awarded to top two freshmen in incoming class)

- Axline Scholarship (2007, full ride)

- US Physics Olympiad semifinalist (2006)

- US Chemistry Olympiad semifinalist (2006)

- Intel International Science Fair (2007)

- Siemens AP Scholar (2006, awarded to 2 high school students per state)

References

- Dr. Bruce Hay, haybruce@its.caltech.edu, 626.395.3399

- Dr. Matilde Marcolli, matilde@caltech.edu

- Dr. Benjamin Allen, benjamin.allen@protabit.com