

Nicholas Schiefer

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Education

2012 - 2016 (expected) **California Institute of Technology**, *B.S. in Computer Science*

Research & Work Experience

- 2015 - **Undergraduate Thesis Student**, *Schulman Group, California Institute of Technology*
Thesis research on algorithms for causal inference in graphical models, supervised by Leonard Schulman.
- 2014 - **Undergraduate Researcher and Summer Undergraduate Research Fellow**, *DNA and Natural Algorithms Group (Winfree Lab), California Institute of Technology*
Theoretical research on molecular computation with interacting chemical reaction networks and tile self-assembly.
- 2014 - **Teaching Assistant**, *California Institute of Technology*
CS38 (Introduction to Algorithms–Spring 2014 and Spring 2015), CS150 (Probability and Algorithms–Fall 2014), BE/CS/CNS/Bi191a (Biomolecular Computation–Winter 2015), and Ph11 (Freshman Research Tutorial–Fall 2015)
- 2014 **Summer Undergraduate Research Fellow**, *Preskill Group and IQIM, California Institute of Technology*
Theoretical and computational research on thermalization models and algorithmic cooling.
- 2013 - **Computational Physics Research**, *in collaboration with Milo Lin at the University of California, Berkeley*
Focus on algorithms for studying the dynamics of self-assembling systems, such as viral capsids.
- 2013 **Physics 11 Fellow**, *California Institute of Technology*
Computational work on folding dynamics of meso-scale DNA globules, in collaboration with Milo Lin.
- 2012 **Intern**, *OANDA Corporation*
Software development with a focus on real time profit/loss tracking and applied machine learning.
- 2011 - 2012 **Research Associate**, *Clarke Group, University of Waterloo*
Research in novel document expansion techniques for information retrieval on short documents.
- 2010 - 2011 **Student-on-Call**, *IBM Canada, Ltd.*
Development of distributed computing libraries for secondary and post-secondary education.

Honors & Awards

- Nov. 2015 Rhodes Scholarship Finalist (*Ontario, Canada region*)
- Aug. 2015 ISNSCE Best Presentation Award, 21st International Conference on DNA Computing and Molecular Programming (DNA21)
- May 2015 Honorable Mention, Bhansali Prize in Computer Science (*best undergraduate research in computer science*)
- Apr. 2015 Dean's Cup Leadership Award

2014 & 2015	Semifinalist, Perpall Family Public Speaking Competition
2014 & 2015	Caltech Alumni Association Spirit Award
Jan. 2013	Physics 11 Fellowship
June 2012	Top 20 under 20 (<i>awarded to Canadian youth for outstanding innovation, leadership, and achievement</i>)
June 2012	Governor General's Academic Medal
May 2012	Intel Foundation Young Scientist Award (<i>grand prize and \$50,000 scholarship at the Intel International Science and Engineering Fair</i>)
May 2012	Google Award for Excellence in Computer Science, Intel International Science and Engineering Fair
Apr. 2012	City of Pickering Special Citation Award (<i>awarded to a citizen of Pickering, Canada for outstanding achievement</i>)
Mar. 2012	CIBC National Scholarship, University of Waterloo (declined) (<i>largest scholarship to the Waterloo CS department</i>)
May 2011	Gold Medal and Best-in-Division, 2011 Canada Wide Science Fair

Peer-Reviewed Publications

2015	Nicholas Schiefer and Erik Winfree, “Universal Computation and Optimal Construction in the Chemical Reaction Network-Controlled Tile Assembly Model”, <i>21st International Conference on DNA Computing and Molecular Programming (DNA21)</i> , 2015, vol. 9211, pp. 34–54.
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Talks, Posters & Presentations

Jan. 2015	“Computation and Construction in the Chemical Reaction Network-Controlled Tile Assembly Model”, <i>Molecular Programming Project Workshop (MPP 2015)</i> , Poster Session
Oct. 2014	“Heat-Bath Algorithmic Cooling in Noisy Open Quantum Systems”, <i>SURF Seminar Day 2014</i>
May 2012	“Markov-Chain Inspired Microsearch”, <i>Intel International Science and Engineering Fair (ISEF 2012)</i>
Feb. 2012	“Accept, Convene, Connect, and Effect” (keynote), <i>Science Expo 2012</i>
Nov. 2011	“Cloud Computing in the classroom”, <i>IBM Centre for Advanced Studies Conference (CASCON 2011)</i>
Oct. 2011	“Markov Chain-Inspired Microsearch”, <i>Google Tech Talk, Google Waterloo</i>
Sept. 2011	“Searching for Ambiguity: Markov Chain-Inspired Microsearch”, <i>TEDxToronto 2011</i>
May 2011	“Markov-Chain Inspired Microsearch”, <i>Canada-Wide Science Fair (CWSF 2011)</i> and <i>York Region Sci-Tech Fair</i>

Volunteer Work & Student Leadership

2015 -	Student Representative, Council on Undergraduate Education
2015 -	Student Representative, Computer Advisory Committee
2015 -	Student Representative, Student Life and Housing Committee
2013 -	Upperclass Counselor, Dabney House
2015 -	President, Dabney House
2014 -	Student Representative, Safety Net Committee
2014 -	Representative, Title IX Advisory Committee
2014 -	Representative, Deans' Advisory Council

2014 - 2015	Treasurer, Dabney House
2014 - 2015	Student Representative, Upperclass Admissions Committee
2014 - 2015	Secretary, Head UCC Council
2013 - 2015	Head Upperclass Counselor, Dabney House
2013 - 2014	Representative-at-Large, Undergraduate Honor Code Committee
2013 - 2015	Student Representative, Freshman Admissions Committee
2013 - 2015	Student Representative, Core Curriculum Steering Committee
2013 - 2014	Historian, Dabney House
2012 - 2015	Representative-at-Large, Academics and Research Committee