Nicholas Schiefer

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Education

2016 - ? **Massachusetts Institute of Technology**, *Ph.D in Computer Science, on leave*

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

Research & Work Experience

2017 - present **iCloud Software Engineer**, *Apple*
Work on backend database systems for iCloud.

2016 - 2017 **Graduate Research Fellow**, *Theory of Computing Group, Massachusetts Institute of Technology*
Graduate research on sketching methods in machine learning, advised by Piotr Indyk.

2015 - 2016 **Undergraduate Thesis Student**, *Schulman Group, California Institute of Technology*
Thesis research on algorithms for causal inference in graphical models, supervised by Leonard Schulman.

2014 - 2016 **Undergraduate Researcher and Summer Undergraduate Research Fellow**, *DNA and Natural Algorithms Group (Winfree Lab), California Institue of Technology*
Theoretical research on molecular computation with interacting chemical reaction networks and tile self-assembly.

2014 - 2016 **Teaching Assistant**, *California Institute of Technology*
CS38 (Introduction to Algorithms–Spring 2014, 2015, and 2016), CS150 (Probability and Algorithms–Fall 2014), BE/CS/CNS/Bi191a (Biomolecular Computation–Winter 2015 and 2016), and Ph11 (Freshman Research Tutorial–2015-2016 academic year)

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.

Publications

2018 Peter Ahrens, Helen Xu, and **Nicholas Schiefer**, "A Fill Estimation Algorithm for Sparse Matrices and Tensors in Blocked Formats", *2018 IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2018.*

2016 **Nicholas Schiefer** and Erik Winfree, "Time Complexity of Computation and Construction in the Chemical Reaction Network-Controlled Tile Assembly Model", *22nd International Conference on DNA Computing and Molecular Programming (DNA22), 2016*

2015 **Nicholas Schiefer** and Erik Winfree, "Universal Computation and Optimal Construction in the Chemical Reaction Network-Controlled Tile Assembly Model", *21st International Conference on DNA Computing and Molecular Programming (DNA21), 2015, vol. 9211, pp. 34–54.*

Honors & Awards

2016 Akamai Presidential Fellowship

June 2016 George W. Housner Prize *(best undergraduate research)*

June 2016 Frederic W. Hinrichs, Jr. Memorial Award *(oustanding student leadership)*

May 2016 Bhansali Prize in Computer Science *(best undergraduate research in computer science)*

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

Apr. 2015 Deans' 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 *(awarded to Canadian youth for outstanding innovation, leadership, and achievement)*

June 2012 Governor General's Academic Medal

May 2012 Intel Foundation Young Scientist Award *(grand prize and $50,000 scholarship at the Intel International Science and Engineering Fair)*

May 2012 Google Award for Excellence in Computer Science, Intel International Science and Engineering Fair

Apr. 2012 City of Pickering Special Citation Award *(awarded to a citizen of Pickering, Canada for outstanding achievement)*

Mar. 2012 CIBC National Scholarship, University of Waterloo (declined) *(largest scholarship to the Waterloo CS department)*

May 2011 Gold Medal and Best-in-Division, 2011 Canada Wide Science Fair

Talks, Posters & Presentations

Jan. 2015 "Computation and Construction in the Chemical Reaction Network-Controlled Tile Assembly Model", *Molecular Programming Project Workshop (MPP 2015), Poster Session*

Oct. 2014 "Heat-Bath Algorithmic Cooling in Noisy Open Quantum Systems", *SURF Seminar Day 2014*

May 2012 "Markov-Chain Inspired Microsearch", *Intel International Science and Engineering Fair (ISEF 2012)*

Feb. 2012 "Accept, Convene, Connect, and Effect" (keynote), *Science Expo 2012*

Nov. 2011 "Cloud Computing in the classroom", *IBM Centre for Advanced Studies Conference (CASCON 2011)*

Oct. 2011 "Markov Chain-Inspired Microsearch", *Google Tech Talk, Google Waterloo*

Sept. 2011 "Searching for Ambiguity: Markov Chain-Inspired Microsearch", *TEDxToronto 2011*

May 2011 "Markov-Chain Inspired Microsearch", *Canada-Wide Science Fair (CWSF 2011) and York Region Sci-Tech Fair*

Volunteer Work & Student Leadership

2015 - 2016 Student Representative, Council on Undergraduate Education

2015 - 2016 Student Representative, Computer Advisory Committee

2015 - 2016 Student Representative, Student Life and Housing Committee

2013 - 2016 Upperclass Counselor, Dabney House

2015 - 2016 President, Dabney House

2014 - 2016 Student Representative, Safety Net Committee

2014 - 2016 Representative, Title IX Advisory Committee

2014 - 2016 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