

Jason Gross

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PRESENT ADDRESS

258 Prospect Street, Apt 1L
Cambridge, MA 02139

PERMANENT ADDRESS

126 Hayrick Lane
Commack, NY 11725

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Began Doctorate of Philosophy in Computer Science in September 2013

Research Interests: Homotopy Type Theory, Category Theory, Program Synthesis, Type Theory

Bachelor of Science, June 2013

Major in Mathematics and Physics

Undergraduate G.P.A. 4.6/5.0

Coursework:

- Computer Science: Foundations of Program Analysis (current), Performance Engineering of Software Systems, Structure and Interpretation of Computer Programs
- Physics: Statistical Physics I & II, Quantum Physics I, II, & III, Classical Mechanics II, Waves and Vibrations, Special Relativity and the Physics of Spacetime
- Mathematics: Paradox and Infinity, Category Theory for Scientists, Algebraic Topology I, Seminar in Topology, Introduction to Topology, Real Analysis, Abstract Algebra I & II, Differential Equations, Calculus I & II, Linear Algebra
- Other Sciences: Introductory Biology, Introductory Chemistry, Design a Concentrated Solar Power Water Heater (seminar)
- Other: The Art and Science of Happiness, Metaphysics, Introduction to Musical Composition, Capitalism and Its Critics, Moral Psychology, Philosophy of Quantum Mechanics, Moral Problems and the Good Life, Philosophy of Love

EXPERIENCE

MIT

April 2012–Present

Researcher

Cambridge, MA

- Entered a significant amount of category theory into the automated proof assistant Coq (<https://github.com/JasonGross/HoTT-categories>)
- Worked on building an interface for databases and database migration on top of category theory in Coq with David Spivak and Adam Chlipala

MIT CSAIL

November 2009–September 2011

Researcher

Cambridge, MA

- Designed from scratch a data collection webpage, collected data for, and helped with research on categorical and transfer learning (<http://jgross.scripts.mit.edu/alphabets/>).
- Co-author of “One shot learning of simple visual concepts” published in *Proceedings of the 33rd Annual Meeting of the Cognitive Science Society*.

MIT

Fall 2009–Present

Teacher

Cambridge, MA

- Taught classes on L^AT_EX, philosophy, linear algebra, and quantum mechanics for MIT Educational Studies Program’s Splash, Spark, and Summer HSSP (High School Studies Program)
- Teaching Assistant for 8.012 (Physics I) and 8.022 (Physics II) in Experimental Study Group

MIT OCW

May–August 2010

Cambridge, MA

- Evaluated and categorized videos of Walter Lewin solving physics problems for updating the

8.01 (Physics I) OpenCourseWare (OCW) website.

Commack High School

Fall 2006–Summer 2009

Independent Researcher

Commack, NY

- Independently researched circuits over sets of natural numbers for three years.
- Won fourth place award in mathematics in ISEF (Intel International Science and Engineering Fair) in 2009, third place award in ISEF 2008.

Turnpike Total Appliance

Fall 2006–Summer 2009

Web Page Designer

Commack, NY

- Designed and improved main company website, took initiative to make more improvements.

COMPUTER SKILLS

- Proficient skills – BASIC, Python, Java, JavaScript, Mathematica, T_EX macro language, Coq
- Working knowledge – Agda, C, C++, Scheme, Haskell, Matlab, HTML, CSS, git, L^AT_EX
- Basic knowledge – OCaml, Ur/Web

HONORS AND AWARDS

- Mathematics Honor Society (Commack High School)
- Collection of 12 original K’NEX synagogue models exhibited in various museums (2004–2008)
 - Collection of 12 original K’NEX synagogue models
 - Volunteered to give speeches and conduct K’NEX workshops for children at opening of exhibits, as well as in many locations in NY area
 - April 2008 — Gave interview for April edition of BabagaNewz Magazine and audio interview for BabagaNewz.com
 - October 2006 — Displayed in Gurwin Nursing Home on Long Island
 - February 2006 — Exhibited at Lisa Ann Watson Children’s Discovery Museum in Miami, Florida
 - October 2005 — Displayed at Shomrim (Society for New York City Jewish Police Officers)
 - February–April 2005 — Exhibited in Yeshiva University Museum in Manhattan
 - December 2004 — Displayed at Suffolk Y-JCC in Commack
- Graduated Cum Laude from Commack High School (June 2009)
- Commack High School Outstanding Academic Performance (June 2009)
- Florence Burns Scholarship for Achievement of Excellence in Computer Science (June 2009)
- Theodore R. Spedale Award for Achievement of Excellence in Mathematics (June 2009)
- Commack High School Mathematics Research Award (June 2009)
- President’s Award for Educational Excellence (June 2009)
- AP Scholar with Distinction (2009)
- Robert C. Byrd Honors Scholarship (June 2009)
- ISEF (Intel International Science & Engineering Fair)
 - Math research paper, “Circuits over Sets of Natural Numbers” won 3rd Place in Math in Atlanta, May 2008
 - Math research paper, “An Investigation of the Closure of the Set of Singleton Sets of Natural Numbers under \cup , \cap , $\bar{}$, $+$, \times ” won 4th place in Math in Reno, May 2009
- LISEF (Long Island Science & Engineering Fair) — Won First Place Grand Award in Math in March 2009; selected to participate in ISEF 2009
- 2009 National Merit Scholarship Finalist (February 2009)
- JSHS (Junior Science & Humanities Symposium) — Invited to present math research paper, February 2009 and February 2008
- Rensselaer Medal — Awarded the Rensselaer Polytechnic Institute’s Rensselaer Medal, June 2008

- Outstanding Junior Award — sole recipient, awarded by Suffolk County Math Teacher's Association (June 2008)
- County All-Star Interscholastic Math League — competed at NYSML (New York State Mathematics League) and ARML (American Regions Mathematics League) during junior, sophomore and freshmen years, 2006–2009; Achieved individual high score for team in 2009
- Suffolk County Senior High Interscholastic Math League — 2nd in county in 2009, 1st in county in 2008, 3rd in county in 2007
- NYSSEF (New York State Science and Engineering Fair)
 - 2008 (11th grade) — 1st in math in Intel division, one of four first place individual winners in fair, Mu Alpha Theta award, Army award, Ohio Wesleyan University Scholarship
 - 2007 (10th grade) — 1st in math in Andromeda Division, earned Mu Alpha Theta Award from National Mathematics Honor Society
- Long Island Math Fair
 - 2008 (11th grade) — Earned gold medal for “Group Theory” project
 - 2007 (10th grade) — Earned gold medal for “Circuits over Sets of Natural Numbers” project
 - 2006 (9th grade) — Earned gold medal for “Prime Numbers” project
 - 2005 (8th grade) — Earned gold medal for “The Fourth Spatial Dimension” project
 - 2004 (7th grade) — Earned gold medal for “The Seven Bridges of Königsberg” project
- AIME (American Invitational Mathematics Examination)
 - 2009 (12th grade) - ???
 - 2008 (11th grade) - score of 8
 - 2007 (10th grade) - score of 4
 - 2006 (9th grade) - score of 1
- American Mathematics Contest 12 (AMC-12)
 - 2009 (12th grade) - score of ???
 - 2008 (11th grade) - score of 120, top 1% nationwide, earned title of “School Winner”
 - 2007 (10th grade) - score of 103.5, top 1% nationwide, earned title of “School Winner”
- American Mathematics Contest 10 (AMC-10)
 - 2006 (9th grade) - score of 127.5, top 1% nationwide, earned title of “School Winner”
 - 2005 (8th grade) - score of 118.5, earned title of “School Winner” in high school as an 8th grader in the 9th grade honors math class
- Suffolk County Mathematics Contest
 - 2009 (12th grade) - ???
 - 2008 (11th grade) - 1st place in county competing with 12th graders
 - 2007 (10th grade) - 4th place in county competing with 11th graders
 - 2006 (9th grade) - 4th place in county competing with 10th graders
 - 2005 (8th grade) - 5th place in county competing with 9th graders
 - 2004 (7th grade) - 1st place in county
- Suffolk County Mathematics Teachers Association (SCMTA) Tournament
 - 2009 (12th grade) - ??????th in county
 - 2008 (11th grade) - 4th in county
 - 2007 (10th grade) - 2nd in county
 - 2006 (9th grade) - 1st in county
- Commack High School Mathematics Department Awards — June 2008, June 2007, and June 2006
- Commack Middle School Mathematics Departmental Award — was only student of 605 students to receive Commack Middle School mathematics departmental award, 2005
- Suffolk County Mathcounts — placed first in county as individual, 2005

- USA Mathematics Talent Search (USAMTS), 2007–2008; Placed on National List of Students with 6 Commended Solutions in 2008, silver medal in 2008
- Harvard-MIT Mathematics Tournament (HMMT), February 2009, 2008, and 2007
- New York State Science Olympiads
 - February 2008 — 2nd place in Environmental Chemistry, 4th place in Circuit Lab, 4th place in Five Star Science
 - February 2007 — 4th place in Circuit Lab
- Mandelbrot Competition, team that competes in national competitions, 2006–2009; Placed on National Leaderboard (Top Tier) in 2008; co-captain in 2007–2008, captain in 2008–2009
- American Computer Science League (ACSL) Club, 2005–present; President in 2008–2009
- United States of America Computer Olympiad (USACO), 2005–present
- Suffolk County Senior High Interscholastic Math League, 2005–present
- Article was published in Teen Ink Magazine (November 2007)

COMMUNITY SERVICE AND INVOLVEMENT

- Member of National Math Honor Society; Tutor students in math both in and out of school (2007–2009)
- Member of National Technology Honor Society (2007–2009)

EXTRACURRICULAR ACTIVITIES

- Canada/USA Mathcamp (Summers 2006–2009)
- HMMT Solutions Editor (2010)
- SIPB (Student Information and Processing Board) Member
- Project leader for MITeX (<http://mitex.mit.edu/>), an online interface for composing L^AT_EX
- Committer to the SIPB BarnOwl project (<http://barnowl.mit.edu>)
- Co-maintainer of the homotopy type theory Coq repository (HoTT/HoTT on github)

INTERESTS

- Philosophy
- Programming
- Dancing, especially contra-, square-, and tango dancing
- Psychology
- Hiking
- MIT Mystery Hunt, Participated on Manic Sages Team, January 2008–2012