Alan Guo

Contact Information

Computer Science and Artificial Intelligence Laboratory
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Education

Massachusetts Institute of Technology, Cambridge, MA

Candidate for Ph.D. in Computer Science

S.M. in Computer Science, February 2013.

- Advisor: Madhu Sudan
- GPA: 5.0/5.0

Duke University, Durham, NC

B.S. in Mathematics, minor in Computer Science, May 2011.

- *Summa cum laude* (GPA: 3.97/4.0)
- Highest Distinction in Mathematics
- Thesis Advisor: Ezra Miller

Academic Experience

Massachusetts Institute of Technology, Cambridge, MA

Research Assistant — *September 2011 to present*

- Research in theoretical computer science.

University of Minnesota - Twin Cities, Minneapolis, MN

Research Experience for Undergraduates — *June 2010 to July 2010*

- Research in algebraic combinatorics.
- Resulted in two published research papers.

Duke University, Durham, NC

PRUV Researcher — *June 2009 to July 2009*

- Worked on problems in combinatorial commutative algebra and combinatorial game theory.
- Proved algebraic structure for certain classes of games and constructed algorithms for them.

Honors and Awards

National Science Foundation

- NSF Graduate Research Fellowship, 2011.

Duke University

- Julia Dale Prize in Mathematics (awarded to top two senior math majors), 2011.
- Faculty Scholar (awarded to top three seniors), 2011.
- Assistant Chief Student Marshal (awarded to two juniors), 2010.
- Phi Beta Kappa, 2010.
- Karl Menger Award (awarded for excellence in math competitions), 2010, 2011.

COMAP

- Finalist Team (top 1%), Mathematical Contest in Modeling, 2010, 2011.

Barry M. Goldwater Scholarship Program

- Goldwater Scholarship Honorable Mention, 2010.

Papers

Electronic versions of my papers may be found on my academic webpage at `www.mit.edu/~aguo`.

1. Andrea Campagna, Alan Guo, Ronitt Rubinfeld. Local reconstructors and tolerant testers for connectivity and diameter. Proceedings of International Workshop on Randomization and Computation (RANDOM) 2013.
2. Alan Guo. High rate locally correctable codes via lifting. Electronic Colloquium on Computational Complexity (ECCC) Technical Report 13-053, April 4, 2013.
3. Alan Guo, Swastik Kopparty, Madhu Sudan. New affine-invariant codes from lifting. Proceedings of Innovations in Theoretical Computer Science (ITCS) 2013.
4. Alan Guo, Madhu Sudan. Some closure features of locally testable affine-invariant properties. Electronic Colloquium on Computational Complexity (ECCC) Technical Report 12-048, April 24, 2012.
5. Greg Aloupis, Alan Guo, Erik Demaine. Classic Nintendo Games are (NP-)hard. arXiv: 1203.1895. March 8, 2012.
6. Alan Guo. Winning strategies for aperiodic subtraction games. *Theoretical Computer Science* **421** (2012), 70–73.
7. Alan Guo, Ezra Miller. Algorithms for lattice games. *International Journal of Game Theory* **42** (2013), 777–788.
8. Charles Chen, Alan Guo, Xin Jin, Gaku Liu. Trivariate monomial complete intersections and plane partitions. *Journal of Commutative Algebra* **3** (2011), 459–489.
9. Alan Guo. Cyclic sieving phenomenon in non-crossing connected graphs. *Electronic Journal of Combinatorics* **18** (2011), #P9.
10. Alan Guo, Ezra Miller. Lattice point methods for combinatorial games. *Advances in Applied Mathematics* **46** (2011), 363–378.

Talks and presentations

1. Local reconstructors and tolerant testers for connectivity and diameter. International Workshop on Randomization and Computation (RANDOM) 2013. UC Berkeley, August 21, 2013.
2. New families of polynomials with applications to coding theory and strengthening the polynomial method. MIT Simple Person's Applied Mathematics Seminar (SPAMS). MIT, February 28, 2013.
3. New affine-invariant codes from lifting. Innovations in Theoretical Computer Science (ITCS) 2013. UC Berkeley, January 12, 2013.
4. New affine-invariant codes from lifting. MIT Great Ideas in Theoretical Computer Science (GITCS) Theory Lunch Seminar. MIT, December 4, 2012.
5. Cyclic sieving phenomenon in non-crossing connected graphs. Poster session at International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC) 2011. Reykjavik, Iceland, June 14, 2011.
6. Cyclic sieving phenomenon in non-crossing connected graphs. MIT Combinatorics Seminar. MIT, February 9, 2011.
7. Lattice point methods in misere games. BIRS Combinatorial Game Theory Workshop. Banff International Research Station, January 11, 2011.
8. Lattice point methods in combinatorial games. Regional Undergraduate Mathematics Conference. University of North Carolina - Greensboro, November 9, 2009.

Skills

Languages: English (fluent), Mandarin Chinese (native), Spanish (proficient)
Programming: C/C++, Java, Python
Web: HTML, CSS, JavaScript, PHP, MySQL
Computing: Mathematica, Matlab, Maple
Typesetting: LaTeX