

# Andrew Morgan

## Curriculum Vitæ

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Citizenship: United States  
Born: 9 Aug 1991

### Education

- 2014–present **Graduate Student**, *University of Wisconsin–Madison*.  
Advised by Dieter van Melkebeek.  
Expected graduation: Spring 2020.
- 2009–2013 **B.S. Computer Science & Mathematics**, *University of Wisconsin–Madison*.  
Jan 2012–Dec 2013 at UW–Madison. GPA 3.975 (excludes ASU courses).  
Aug 2009–Dec 2011 at Arizona State University. GPA 4.000.

### Research Interests

**Computational complexity theory**, specifically circuit lower bounds, derandomization, polynomial identity testing, and Kolmogorov complexity, as well as the connections between these and the rest of computational complexity theory.

### Publications

#### Journal

- 2018 Eric Allender, Joshua A. Grochow, Dieter van Melkebeek, Cristopher Moore, and Andrew Morgan. **Minimum Circuit Size, Graph Isomorphism, and Related Problems**. *SIAM Journal on Computing*, 47(4):1339–1372.

#### Conference

- 2018 **Minimum Circuit Size, Graph Isomorphism, and Related Problems**. Eric Allender, Joshua A. Grochow, Dieter van Melkebeek, Cristopher Moore, and Andrew Morgan. In *Proceedings of the 9th Innovations in Theoretical Computer Science Conference (ITCS 2018)*, 20:1–20:20.

#### Technical Reports

- 2018 **A Note on Graph Isomorphism and Smart Reductions**. Eric Allender, Joshua A. Grochow, Dieter van Melkebeek, Cristopher Moore, and Andrew Morgan. TR15-162 (rev. 1). Electronic Colloquium on Computational Complexity.

### Research Appointments

- Fall 2018 **Visiting Graduate Student**, Simons Institute for Theory of Computing, Berkeley.  
Participant in the Lower Bounds in Computational Complexity program.
- 2018–2019 **Cisco Fellowship**, granted by Department of Computer Sciences.  
Research fellowship awarded to outstanding students pursuing a doctoral degree.
- Spring 2016 **Research Assistantship**, supervised by Dieter van Melkebeek.  
Research studying a new approach to the Unique Games Conjecture from complexity theory.
- 2014–2015 **First-Year Departmental Fellowship**, granted by Department of Computer Sciences.  
Awarded to the strongest applicants to the UW–Madison CS graduate program.
- 2012 & 2013 **Summer Research Assistant Award**, granted by Department of Computer Sciences.  
Research on optimal (or nearly-optimal) pricing in small-scale economic models.

Spring 2013 **“Collaborative Undergraduate Research Lab” Participant.**  
Computational experiments on the accuracy of various refinements to the Cohen–Lenstra heuristic from analytic number theory.

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## Teaching Appointments

2015–2018 **Teaching Assistant**, *University of Wisconsin–Madison*.  
CS 577, Introduction to Algorithms. Spring 2018, Fall 2017, Spring 2017, Fall 2016, Fall 2015, and Summer 2015 (scribe).

2015 **ACM–ICPC Assistant Coach**, *University of Wisconsin–Madison*.  
The ACM International Collegiate Programming Contest is an annual contest where universities from around the world send their best programmers to race in a 5-hour problem-solving sprint.

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## Programming Experience

Fall 2015 **Grading Automation.**  
Improved automation of grading of student programming submissions for undergraduate algorithms course. (Python, Ruby)

Fall 2015 **Course Project, Grad-level AI**, “Learning Separating Hyperplanes in Fourier Space”.  
Managed a medium-sized data set, as well as designed, implemented, and orchestrated the software operating on it. (C++, Python)

2014 & 2015 **ACM–ICPC World Finals Contestant.**  
Primary language: C++

2013–present **Computational Explorations in Research.**  
Implemented various research-related computational explorations. (SageMath, Python)

2011 **Student Web Developer**, Lunar Reconnaissance Orbiter Camera group, ASU.  
Maintained public-facing website (PHP), assisted development of Ruby on Rails applications for internal and public use.