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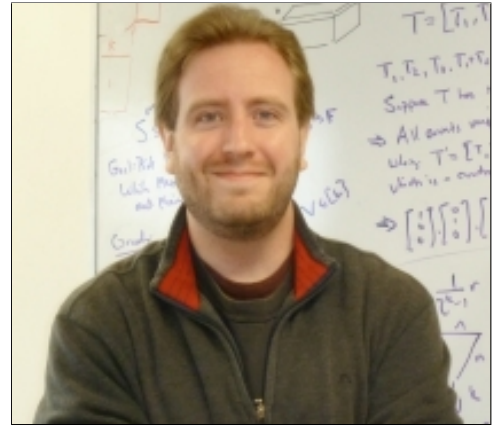
# CURRICULUM VITAE

Matthew Anderson

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CONTACT  
INFORMATION

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(UNTIL APRIL)

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William Gates Building  
15 JJ Thomson Avenue  
Cambridge, CB3 0FD, UK

PERMANENT  
ADDRESS

35 Linden Lane  
Plainsboro, NJ, 08536, USA

CITIZENSHIP

United States of America

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EDUCATION

**University of Wisconsin-Madison**

Ph.D., Computer Sciences, August 2012  
• Advisor: Dieter van Melkebeek  
• Minor: Mathematics  
M.S., Computer Sciences, May 2009

**Carnegie Mellon University**

B.S., Computer Science, Major GPA 3.94/4, May 2004  
B.S., Physics, Major GPA 3.94/4, May 2004

RESEARCH  
EXPERIENCE

**University of Cambridge**

*Research Associate*

Summer 2012 – Present

Performed post-doctoral research in descriptive complexity under the supervision of Prof. Anuj Dawar.

**University of Wisconsin-Madison**

*Research Assistant*

Summer 2009 – Summer 2012

Performed research pursuant to a Ph.D. under the supervision of Prof. Dieter van Melkebeek.

**University of California, Los Angeles**

*Summer Researcher*

Summer 2003

Contributed to Fortran computer simulations studying construction tolerances for the Linac Coherent Light Source being built at the SLAC National Accelerator Laboratory.

RESEARCH  
INTERESTS

Theory of Computing, Computational Complexity, Algebraic Complexity, Circuit Complexity, Descriptive Complexity, Derandomization, Lower Bounds

- PUBLICATIONS [C4] M. Anderson, and A. Dawar. *On Symmetric Circuits and Fixed-Point Logics*. In Proceedings of the 31<sup>st</sup> International Symposium on Theoretical Aspects of Computer Science (STACS), to appear, 2014.
- [J2] M. Anderson, D. van Melkebeek, and I. Volkovich. *Deterministic Polynomial Identity Tests for Multilinear Bounded-Read Formulae*. Computational Complexity, accepted, in revision, 53 pages, 2013.
- [C3] M. Anderson, A. Dawar, and B. Holm. *Maximum Matching and Linear Programming in Fixed-Point Logic with Counting*. In Proceedings of the 28<sup>th</sup> Annual ACM/IEEE Symposium on Logic in Computer Science (LICS), pages 173–182, 2013.
- [J1] M. Anderson, D. van Melkebeek, N. Schweikardt, and L. Segoufin. *Locality from Circuit Lower Bounds*. SIAM Journal on Computing (SICOMP), volume 41, issue 6, pages 1481–1523, 2012.
- [C2] M. Anderson, D. van Melkebeek, and I. Volkovich. *Derandomizing Polynomial Identity Testing for Multilinear Constant-Read Formulae*. In Proceedings of the 26<sup>th</sup> Annual IEEE Conference on Computational Complexity (CCC), pages 273–282, 2011.
- [C1] M. Anderson, D. van Melkebeek, N. Schweikardt, and L. Segoufin. *Locality of Queries Definable in Invariant First-Order Logic with Arbitrary Built-in Predicates*. In Proceedings of the 38<sup>th</sup> International Colloquium on Automata, Languages and Programming (ICALP), Part II, pages 368–379, 2011. Invited to the special issue for selected papers from the conference.
- PREPRINTS M. Anderson, and A. Dawar. *On Symmetric Circuits and Fixed-Point Logics*. arXiv preprint 1401.1125. 22 pages, 2014.
- M. Anderson, A. Dawar, and B. Holm. *Maximum Matching and Linear Programming in Fixed-Point Logic with Counting*. arXiv preprint 1304.6870. 34 pages, 2013.
- WORK IN M. Anderson. *Lower Bounds for Symmetric Circuits*.
- PROGRESS M. Anderson. *Analysis of Nondeterministic Pass Machines*.
- THESES M. Anderson. *Advancing Algebraic and Logical Approaches to Circuit Lower Bounds*. University of Wisconsin-Madison, Ph.D. Thesis, 2012.
- M. Anderson. *QCNMR: Simulation of a Nuclear Magnetic Resonance Quantum Computer*. Carnegie Mellon University, Senior Honors Thesis, 2004.
- RESEARCH M. Anderson. *Maximum Matching and Linear Programming in Fixed-Point Logic with Counting*
- PRESENTATIONS
  - RWTH Aachen University, Aachen, Germany, January 2014.
  - Symposium on Logic in Computer Science, New Orleans, Louisiana, June 2013.*On Symmetric Circuits and Fixed-Point Logics*
  - Symposium on Theoretical Aspects of Computer Science, Lyon, France, March 2014.
  - Symposium on Logic in Computer Science, New Orleans, Louisiana, June 2013. (Short Talk)*Locality from Circuit Lower Bounds*
  - Midwest Theory Day, Chicago, Illinois, November 2011.
  - Colloquium on Automata, Languages and Programming, Zurich, Switzerland, July 2011.*Deterministic Polynomial Identity Tests for Multilinear Bounded-Read Formulae*
  - Indiana State University, Terre Haute, Indiana, March 2012.
  - University of Michigan, Ann Arbor, Michigan, January 2012.
  - Conference on Computational Complexity, San Jose, California, June 2011.
  - Dagstuhl Seminar on the Computational Complexity of Discrete Problems, Germany, March 2011.
  - Midwest Theory Day, Chicago, Illinois, December 2010.

TEACHING  
EXPERIENCE

**University of Wisconsin-Madison**

*Instructor*

Fall 2005 – Fall 2006

Taught the undergraduate introduction to programming course in Java (CS 302). Responsible for lectures, grades, and office hours. Shared responsibility in developing homework assignments and exams. Received an average score of 4.55/5 on “recommend instructor” question of course evaluations.

*Teaching Assistant*

Various Semesters, 2006 – 2008

Assisted instructors with their courses by performing the following duties: developing homework assignments, grading, and holding office hours. Assisted in the following courses:

- Introduction to Data Structures (CS 367),
- Introduction to Numerical Methods (CS 412),
- Introduction to Computer Networks (CS 640), and
- Principles of Programming Languages (CS 704).

*Discussion Leader*

Fall 2004 – Spring 2005

Led discussion sections of the introduction to programming course (CS 302). Shared responsibility for developing discussion exercises and homework assignments.

**Carnegie Mellon University**

*Undergraduate Teaching Assistant*

Fall 2001, Fall 2002 – Fall 2003

Assisted a graduate teaching assistant during discussion sections of the introductory physics course. Shared responsibility for grading, helping students in small groups, and tutoring.

*Tutor*

Fall 2002 – Spring 2003

Staffed the physics course center that provided tutoring for all upper-level undergraduate physics courses.

PROFESSIONAL  
EXPERIENCE

**Netrics Inc.**, Princeton, NJ

*Software Intern*

Summer 2001, 2002

Developed a software testing suite, executed performance studies and implemented optimizations for database search software running on multi-processor servers.

PROGRAMMING  
LANGUAGES

Java, C/C++, Python, ML, Fortran, QBasic, L<sup>A</sup>T<sub>E</sub>X

SERVICE

*Reviewer / Sub-reviewer*

Ongoing

Symposium on Theory of Computing (STOC), Symposium on Foundations of Computer Science (FOCS), Conference on Computational Complexity (CCC), Transactions on Computation Theory (ToCT), SIAM Journal on Computing (SICOMP), Workshop on Randomization and Computation (RANDOM), Computability in Europe (CiE), Logical Methods in Computer Science (LMCS), ACM India Doctoral Dissertation Award.

*Head Coach / Assistant Coach*

Fall 2005 – Spring 2009

Helped to prepare teams of students for participation in the ACM International Collegiate Programming Contest (ICPC). Shared responsibilities included leading discussions with students, selecting and solving practice problems, organizing practices, managing logistics, and acting as a chaperon.

*Graduate Admissions Committee Member*

Spring 2005

Reviewed and discussed applications for admission into the computer science graduate program at the University of Wisconsin-Madison.

HONORS, AWARDS,  
AND GRANTS

Cisco Systems Distinguished Graduate Fellowship – 2011  
SIGACT STOC Student Travel Grant – 2011  
Vilas Travel Grant – 2011  
ACM ICPC World Finalist, Head Coach – 2009  
ACM ICPC World Finalist, Assistant Coach – 2006, 2007, 2008  
ACM ICPC World Finalist, Contestant – 2005  
Honor Society Member: Phi Beta Kappa, Phi Kappa Phi, Lambda Sigma  
National Society of Collegiate Scholars Member – 2001  
AP Scholar with Distinction – 2000  
National Merit Scholarship: Commended Scholar – 2000

ORGANIZATION  
MEMBERSHIP

Association for Computing Machinery

HOBBIES

Playing board games! Programming video games. Making observations about the world that are humorous to me (and, not infrequently, also to others).