

# Jonathan Dorn

## Curriculum Vitae

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## Employment

- 2017-Present **Senior Scientist**, GRAMMATECH, Ithaca, NY.
- Research new technologies and develop prototypes to solve open problems in program analysis, optimization, and security.
  - Present research results to funding agencies and the broader research community.
  - Manage technical staff, mentor interns, and interview candidates.
- 2011–2017 **Research Assistant**, UNIVERSITY OF VIRGINIA, Charlottesville, VA.
- Summer 2011 **Research Intern**, ADVANCED MICRO DEVICES, INC., Boxborough, MA.  
Investigated performance of scatter-gather algorithms under SISD, SIMD, and MIMD computational models.
- 2010–2011 **Teaching Assistant**, UNIVERSITY OF VIRGINIA, Charlottesville, VA.
- Ran instructional lab sessions for over 40 students.
  - Held office hours for introductory programming and software engineering courses.
  - Graded homework assignments and tests for sections totaling over 200 students.
- 2010 **Senior Software Engineer**, TERRASPARK GEOSCIENCES, Westminster, CO.
- Refactored memory management to improve performance while processing 10 GB datasets.
  - Helped restructure software development process to reduce bug-fix and feature request turn-around time.
- 2007–2009 **Design Engineer II**, FREESCALE SEMICONDUCTOR, INC., Austin, TX.  
Infrastructure Team Lead:
- Designed and implemented compiler for IC design tool automation scripts, focusing on protection of business logic in deliveries to third parties.
  - Established software policies for a development team spanning 3 continents, maintaining a 100k-line application library.
  - Directed 5-person team in replacing a tool for which support was suddenly eliminated. Delivered a drop-in replacement within 10 months, allowing design teams to switch with little or no impact to schedules.
- 2005–2007 **Design Engineer I**, FREESCALE SEMICONDUCTOR, INC., Austin, TX.
- Implemented standard initialization and configuration file capabilities for IC design software.
  - Partnered with key customers to evolve automation solutions for the IC design flow.
  - Coordinated quality assurance and release activities with developers in four countries.
- 2004–2005 **CAD Developer I**, FREESCALE SEMICONDUCTOR, INC., Austin, TX.
- Devised automated dependency management and cross-compilation system to enable consistent installation of over 50 software packages on 7 distinct UNIX platforms.
- 2002,2003 **Intern**, MOTOROLA, INC., Austin, TX.
- Wrote and supported applications providing IC design workflow traceability.

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## Awards

- 2015 **ACM SIGSOFT Distinguished Paper Award**, The 10th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2015).

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## Peer-Reviewed Publications

**Jonathan Dorn**, Jeremy Lacomis, Westley Weimer, and Stephanie Forrest. Automatically exploring tradeoffs between software output fidelity and energy costs. *Transactions on Software Engineering*, 45(3):219–236, 2019.

**Jonathan Dorn**, Connelly Barnes, Jason Lawrence, and Westley Weimer. Towards automatic band-limited procedural shaders. *Computer Graphics Forum*, 34(7):77–87, 2015.

Ermira Daka, Jose Campos, Gordon Fraser, **Jonathan Dorn**, and Westley Weimer. Modeling readability to improve unit tests. In *Foundations of Software Engineering*, pages 107–118, 2015.

Ermira Daka, Jose Campos, **Jonathan Dorn**, Gordon Fraser, and Westley Weimer. Generating readable unit tests for Guava. In *Symposium on Search Based Software Engineering*, pages 235–241, 2015.

Eric Schulte, **Jonathan Dorn**, Stephen Harding, Stephanie Forrest, and Westley Weimer. Post-compiler software optimization for reducing energy. In *Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, pages 639–652, 2014.

Chris Gregg, **Jonathan Dorn**, Kim Hazelwood, and Kevin Skadron. Fine-grained resource sharing for concurrent gpgpu kernels. In *Hot Topics in Parallelism (HotPar)*, 2012.

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## Book Chapters

Jeremy Lacomis, **Jonathan Dorn**, Westley Weimer, and Stephanie Forrest. Automatically reducing energy consumption of software. In David H. Wolpert, Chris Kempes, Peter F. Stadler, and Joshua A. Grochow, editors, *The Energetics of Computing in Life and Machines*. The SFI Press, 2019.

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## Education

- 2013–2017 **Ph.D. in Computer Science**, *The University of Virginia*, Charlottesville, VA.  
Thesis: *Optimizing Tradeoffs of Non-Functional Properties in Software*.
- 2010–2012 **Master of Computer Science** in Software Engineering, *The University of Virginia*, Charlottesville, VA.  
Thesis: *A General Software Readability Model*.
- 1999–2004 **Bachelor of Science**, *The University of Texas*, Austin, TX.  
Thesis: *The Development of a General Purpose Raytracer for Acoustical and Visual Rendering of Virtual Environments*.
- 1999–2004 **Bachelor of Arts**, *The University of Texas*, Austin, TX.

## Teaching Activities

### Instructor

Spring 2014 **CS 4501**, Compilers Practicum, (9 students).

### Teaching Assistant

Spring 2011 **CS 2110**, Software Development Methods, (128 students).

Spring 2011 **CS 1110**, Introduction to Programming, (554 students).

Fall 2010 **CS 1120**, From Ada and Euclid to Quantum Computing and the World Wide Web, (45 students).

Fall 2010 **CS 1110**, Introduction to Programming, (203 students).

### Tutor

Spring 2003–  
Spring 2004 **PHY 321**, Selected Topics in Modern Physics.