Jonathan Dorn

Curriculum Vitae

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2017-Present **Senior Scientist**, GRAMMATECH, Ithaca, NY.
- ○ Principal investigator for federally funded research and development effort consisting of between three and eight R&D thrusts and supporting over 30 engineers and scientists.
  - – Reviewed relevant published research projects and met with academic researchers to provide accurate summaries to program managers.
  - – Made recommendations on promising directions and provided regular status reports and presentations to government sponsors.
  - – Coordinated with potential users to communicate current and planned capabilities and to learn desired use cases and improve existing uses.
  - – Planned development schedules and team assignments. Managed team leads and individual contributors as necessary.
- ○ Led research efforts in binary analysis and rewriting, focusing on optimization and security hardening on real-world binaries.
- ○ Helped design and manage development on an open-source binary rewriting infrastructure used across internal research teams as well as external users and contributors.
- ○ Managed a small team of software engineers, DevOps engineers, and graduate and undergraduate interns.

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.

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.

2004–2009 **Design Engineer**, 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.
- ○ Partnered with key customers to evolve automation solutions for the IC design flow.
- ○ 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 integrated-circuit design workflow traceability.

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).

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.

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.

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.