

# CURRICULUM VITAE

DANIEL SPOONHOWER

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## CONTACT INFORMATION

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## EDUCATION

Fall 2002–Present Ph.D. Candidate, Computer Science, Carnegie Mellon University, Pittsburgh, PA  
Advisers: Profs. Robert Harper and Guy Blelloch

Fall 1996– B.S. Computer Science, Cornell University, Ithaca, NY  
Spring 2000 Graduated *magna cum laude* with a specialization in Mathematics

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## RESEARCH SUMMARY

My research focuses on the implementation of programming languages from the perspective of predictable performance. My work relies on a combination of theoretical and practical results to provide programmers with the conceptual tools and software infrastructure necessary to achieve good, portable performance. In the area of parallel computing, I have developed and implemented language extensions that enable programmers to build scalable programs for multicore and other shared-memory parallel architectures. In my dissertation, I describe a cost semantics for a parallel language that provides a formal definition of performance. This definition serves as a basis for a suite of profiling tools and as a specification for the implementation of several scheduling policies. I have also worked in the area of real-time programming and developed a language extension that enables programmers to implement high-frequency, hard real-time tasks in Java without sacrificing memory safety.

I am interested in new language implementation techniques, including aspects of compilers and runtime systems, that improve program performance or take advantage of new computing platforms. I am also interested in new proof methods and theoretical results describing these techniques.

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## FELLOWSHIPS

Fall 2004– Microsoft Research Fellowship  
Spring 2005

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## PUBLICATIONS

### Refereed Conference Papers

*Space Profiling for Parallel Functional Programs.* Daniel Spoonhower, Guy E. Blelloch, Robert Harper, and Phillip B. Gibbons. In Proceedings of the 2008 ACM SIGPLAN International Conference on Functional

Programming (ICFP '08), pp. 253-264, 2008.

*Eventrons: A Safe Programming Construct for High-Frequency Hard Real-Time Applications.* Daniel Spoonhower, Joshua Auerbach, David F. Bacon, Perry Cheng, and David Grove. In Proceedings of the 2006 ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '06), pp. 283-294, 2006.

*High-level Real-time Programming in Java.* David F. Bacon, Martin T. Vechev, Perry Cheng, David Grove, Michael Hind, V. T. Rajan, Eran Yahav, Matthias Hauswirth, Christoph M. Kirsch, Daniel Spoonhower. In Proceedings of the 5<sup>th</sup> ACM International Conference on Embedded Software (EMSOFT '05), pp. 68-78, 2005.

*Using Page Residency to Balance Tradeoffs in Tracing Garbage Collection.* Daniel Spoonhower, Guy Blelloch, and Robert Harper. In Proceedings of the 1<sup>st</sup> ACM/USENIX International Conference on Virtual Execution Environments (VEE '05), pp. 57-67, 2005.

### Invited Workshop Papers

*Cost Semantics for Space Usage in a Parallel Language.* Daniel Spoonhower. In Proceedings of the 2007 ACM SIGPLAN Workshop on Declarative Aspects of Multicore Programming (DAMP '07), pp. 34-36, 2007.

### Book Chapters

*J-Kernel: A Capability-Based Operating System for Java.* Thorsten von Eicken, Chi-Chao Chang, Grzegorz Czajkowski, Chris Hawblitzel, Deyu Hu, and Dan Spoonhower, Secure Internet Programming, LNCS 1603. Springer-Verlag, pp. 453-468, 1999.

### Technical Reports

*Space Profiling for Parallel Functional Programs.* Daniel Spoonhower, Guy E. Blelloch, Phillip B. Gibbons, and Robert Harper. Computer Science Department, Carnegie Mellon University, Technical Report CMU-CS-08-110, 2008.

*The Cult of the Bound Variable: The 9<sup>th</sup> Annual ICFP Programming Contest.* Tom Murphy VII, Daniel Spoonhower, Chris Casinghino, Daniel R. Licata, Karl Crary, and Robert Harper. Computer Science Department, Carnegie Mellon University, Technical Report CMU-CS-06-163, 2006.

*Design and Evaluation of an Extensible Web & Telephony Server based on the J-Kernel.* Daniel Spoonhower, Grzegorz Czajkowski, Chris Hawblitzel, Chi-Chao Chang, Deyu Hu, and Thorsten von Eicken. Department of Computer Science, Cornell University, Technical Report TR98-1715, 1998.

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### TEACHING

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|-----------------|---|
| Fall 2004       | <i>Teaching Assistant</i> , CMU 15-814 Type Systems for Programming Languages.<br>Instructor: Prof. Robert Harper |
| Fall 2003       | <i>Teaching Assistant</i> , CMU 15-312 Foundations of Programming Languages.<br>Instructor: Prof. Frank Pfenning  |
| Fall 1997, 1998 | <i>Teaching Assistant</i> , Cornell CS 130 Creating Web Documents.<br>Instructor: Prof. Daniel Huttenlocher       |

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### DEPARTMENTAL SERVICE

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| Fall 2003–<br>Fall 2008 | <i>Member of Doctoral Review Committee (DRC).</i> The DRC advises the head of the computer science Ph.D. program on a variety of issues including curriculum, recruiting, and facilities. |
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Fall 2008      *Student Observer of the Handshake Committee.* The Handshake Committee is responsible for matching first-year Ph.D. students with advisers.

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## PROFESSIONAL EXPERIENCE

Summer 2007      *Summer Fellow*, Intel Research, Pittsburgh, PA. Mentor: Dr. Phillip B. Gibbons  
Summer 2005      *Research Intern*, IBM T.J. Watson Research Center, Hawthorne, NY. Mentor: Dr. David F. Bacon  
Summer 2003      *Research Intern*, Microsoft Corporation, Redmond, WA. Mentor: Dr. David Tarditi  
January 2000–  
July 2002      *Development Manager, Developer*, Intelligent Markets, Inc., San Francisco, CA.  
Summer &  
Fall 1999      *Intern, Developer*, Xerox PARC, Palo Alto, CA. Mentor: Prof. Daniel Huttenlocher

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## PATENTS

*Region-based memory management for object-oriented programs* (US Patent #7263532). Bjarne Steensgaard and Daniel John Spoonhower. Issued August 28, 2007 and assigned to Microsoft Corporation.

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## REFERENCES

Prof. Guy E. Blelloch  
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Dr. Phillip B. Gibbons  
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## PERSONAL DETAILS

Citizenship: USA