

# Marc Corliss

Department of Mathematics and Computer Science  
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## Research Interests

My main research interests lie in compilers and computer architecture. In particular, I am interested in designing architectures and software systems that make application development less burdensome on programmers. I am exploring compilation for future and modern architectures, dynamic translation, and hardware/software codesign.

In addition, I am interested in computer science education. In particular, I am designing new educational software tools for use in college-level systems courses.

## Education

**University of Pennsylvania**, 2000 - 2006 Philadelphia, PA  
Ph.D. in Computer and Information Science (Dec. 2006)  
Advisor: E Christopher Lewis, Dissertation: *Dynamic Instruction Stream Editing*

Master of Science in Engineering in Computer and Information Science (Dec. 2001)

**Brandeis University**, 1996 - 2000 Waltham, MA  
Bachelor of Arts in Computer Science and Mathematics (May 2000)

## Employment

**Hobart and William Smith Colleges**, Jul. 2006 - present Geneva, NY  
Assistant Professor in the department of Mathematics and Computer Science.

**University of Pennsylvania**, Sep. 2000 - Aug. 2006 Philadelphia, PA  
Graduate Research Assistant in the department of Computer and Information Science. Developed a processor extension called DISE (dynamic instruction stream editor) for transforming programs as they run.

**Los Alamos National Laboratory**, May 2004 - Jul. 2004 Los Alamos, NM  
Research Intern. Studied the performance implications of just-in-time compilation for architectures with non-unified caches.

**University of Pennsylvania**, Sep. 2002 - Aug. 2006 Philadelphia, PA  
Server administrator/web designer. Administered the server and designed web pages for the Graduate Programs of Sansom Place at the University of Pennsylvania.

**Ucentric Systems**, Jun. 2000 - Aug. 2000 Maynard, MA  
Test Tool Developer. Designed and deployed scripts in SilkTest to test products.

**MIT Haystack Observatory**, Jun. 1999 - Aug. 1999 Westford, MA  
Research Intern. Designed, implemented, and evaluated a Java Servlet interface to Haystack's online database.

## Teaching Experience

- Principles of Computer Science (CPSC 120) – Hobart and William Smith Colleges – Fall 2008, Spring 2009, Fall 2010, Spring 2011.
- Introduction to Programming (CPSC 124) – Hobart and William Smith Colleges – Fall 2006, Spring 2007, Fall 2007, Spring 2008.
- Introduction to Computer Architecture (CPSC 220) – Hobart and William Smith Colleges – Spring 2008, Fall 2008, Fall 2009, Fall 2010.
- Operating Systems (CPSC 331/431) – Hobart and William Smith Colleges – Fall 2007, Fall 2009.
- Compilers (CPSC 333/433) – Hobart and William Smith Colleges – Spring 2007, Spring 2009, Spring 2011.
- Networking (CPSC 441) – Hobart and William Smith Colleges – Fall 2006, Fall 2010.
- Unix/Linux skills (CSE 399/004) – University of Pennsylvania – Spring 2006.

## Mentoring

### Senior Honors Projects:

- Rob Hendry – 2009-2010. Designing and implementing a comprehensive compiler generator.
  - Selected, in part for this work, as Honorable Mention for the 2009 Goldwater Scholarship and the 2010 CRA undergrad competition.
  - Presented the work in HWS college-wide and departmental talks.

### Summer Internships:

- Rob Hendry – 2010. Extended COGS (comprehensive compiler generation system).
  - Selected, in part for this work, as Honorable Mention for the 2009 Goldwater Scholarship and the 2010 CRA undergrad competition.
- Marcela Melara – 2010. Ported an educational operating system to the Altera DE1 FPGA.
  - Co-authored published paper of this work in SIGCSE 2011.
  - Nominated, in part for this work, for the 2011 Goldwater Scholarship.
  - Presented the work in a HWS departmental talk and a college-wide poster session.
- Will van Steen – 2009. Built a Java to Bantam Java translator (not fully complete).
  - Presented the work in a HWS departmental talk.
- Sara Young – 2009. Studied, designed, and implemented a garbage collector.
  - Nominated, in part for this work, for the 2010 CRA undergrad competition.
- Rob Hendry – 2007. Built tools for a computer architecture course.
  - Co-authored published paper of this work in CCSC-NE 2009.
  - Selected, in part for this work, as Honorable Mention for the 2009 Goldwater Scholarship and the 2010 CRA undergrad competition.
  - Presented the work in a HWS departmental talk and a college-wide poster session.
- Lex Kridler – 2007. Built an extended library for an educational compiler.
  - Presented the work in a HWS departmental talk and a college-wide poster session.
- Lori Pietraszek – 2007. Built an optimizer for an educational compiler.
  - Co-authored published paper of this work in CCSC-NE 2010.
  - Selected, in part for this work, as Honorable Mention in 2008 CRA undergrad competition.
  - Presented the work at Hudson River Valley Undergrad. Math. Conference (HRUMC '08).

## Publications and Other Writings

(† denotes current and former student co-authors.)

### Journal Publications:

- Bantam Java Compiler Project: Experiences and Extensions.  
**Marc L. Corliss**, David Furcy, Joshua Davis†, and Lori Pietraszek†.  
*Journal of Computing Sciences in Colleges*, Apr. 2010.  
(Published as part of the 2010 CCSC-NE conference proceedings.)
- Larc: A Little Architecture For The Classroom.  
**Marc L. Corliss** and Robert Hendry†.  
*Journal of Computing Sciences in Colleges*, Apr. 2009.  
(Published as part of the 2009 CCSC-NE conference proceedings.)
- The Implementation and Evaluation of Dynamic Code Decompression Using DISE.  
**Marc L. Corliss**, E Christopher Lewis, and Amir Roth.  
*ACM Transactions on Embedded Computer Systems (TECS)*, Vol. 4, No. 1, Feb. 2005.  
(Top LCTES 2003 papers invited to submit an extended paper to TECS 2005.)

### Refereed Conference Publications:

- VIREOS: An Integrated, Bottom-Up Educational Operating Systems Project with FPGA Support.  
**Marc L. Corliss** and Marcela Melara†.  
*Proc. of the 42nd SIGCSE Technical Symposium on Computer Science Education*, Mar. 2011.  
107 of 315 submissions accepted (34%).
- Bantam: A Customizable, Java-Based, Classroom Compiler.  
**Marc L. Corliss** and E Christopher Lewis.  
*Proc. of the 39th SIGCSE Technical Symposium on Computer Science Education*, Mar. 2008.  
100 of 324 submissions accepted (31%).
- Low-Overhead Interactive Debugging via Dynamic Instrumentation with DISE.  
**Marc L. Corliss**, E Christopher Lewis, and Amir Roth.  
*Proc. of the 11th Intl. Symp. on High-Performance Computer Arch. (HPCA-11)*, Feb. 2005.  
28 of 181 submissions accepted (15%).
- A DISE Implementation of Dynamic Code Decompression.  
**Marc L. Corliss**, E Christopher Lewis, and Amir Roth.  
*Proc. of the Conf. on Languages, Compilers, and Tools for Embedded Sys. (LCTES)*, Jun. 2003.  
29 of 128 submissions accepted (23%).
- DISE: A Programmable Macro Engine for Customizing Applications.  
**Marc L. Corliss**, E Christopher Lewis, and Amir Roth.  
*Proc. of the 30th Annual Intl. Symp. on Computer Architecture (ISCA-30)*, Jun. 2003.  
37 of 184 submissions accepted (20%).

### Reviewed Workshop Publications:

- Dynamic Translation as a System Service.  
**Marc L. Corliss**, Vlad Petric, and E Christopher Lewis.  
*Workshop on Interaction between Operating Systems and Comp. Arch. (WIOSCA)*, Jun. 2006.
- Using DISE to Protect Return Addresses from Attack.  
**Marc L. Corliss**, E Christopher Lewis, and Amir Roth.  
*Workshop on Architectural Support for Security and Anti-Virus (WASSA)*, Oct. 2004.

## Unpublished:

- VIREOS Operating Systems Project – Lab Manual.  
**Marc L. Corliss.**  
*Licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 2.5, Aug. 2010.*
- Larc: A Little Architecture for the Classroom – Lab Manual.  
**Marc L. Corliss.**  
*Licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 2.5, Aug. 2010.*
- Bantam Java Compiler Project – Lab Manual.  
**Marc L. Corliss**, David Furcy, and E Christopher Lewis.  
*Licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 2.5, Sep. 2009.*

## Theses:

- Dynamic Instruction Stream Editing.  
**Marc L. Corliss** (advisor: E Christopher Lewis).  
*PhD Thesis, Dept. of Computer and Information Science, University of Pennsylvania, Aug. 2006.*

## Invited Presentations

- VIREOS: An Integrated, Bottom-Up Educational Operating Systems Project with FPGA Support.  
**SIGCSE Technical Symposium on Computer Science Education.**  
Dallas, TX, Mar. 2011.
- Bantam Java Compiler Project: Experiences and Extensions.  
**Consortium for Computing Sciences in Colleges – Northeast region (CCSC-NE).**  
Hartford, CT, Apr. 2010.
- Larc: A Little Architecture for the Classroom.  
**Consortium for Computing Sciences in Colleges – Northeast region (CCSC-NE).**  
Plattsburgh, NY, Apr. 2009.
- Bantam: A Customizable, Java-Based, Classroom Compiler.  
**SIGCSE Technical Symposium on Computer Science Education.**  
Portland, OR, Mar. 2008.
- Dynamic Translation as a System Service.  
**Workshop on Interaction between Operating Systems and Comp. Architecture (WIOSCA).**  
Boston, MA, Jun. 2006.
- Low-Overhead Interactive Debugging via Dynamic Instrumentation with DISE.  
**High-Performance Computer Architecture (HPCA-11).**  
San Francisco, CA, Feb. 2005.
- Using DISE to Protect Return Addresses from Attack.  
**Workshop on Architectural Support for Security and Anti-Virus (WASSA).**  
Boston, MA, Oct. 2004.
- A DISE Implementation of Dynamic Code Decompression.  
**Languages, Compilers, and Tools for Embedded Systems (LCTES).**  
San Diego, CA, Jun. 2003.

## Professional Service and Activities

### Within the Department:

- **Club Co-Sponsor.** Mathematics and Computer Science Club, Feb. 2007 - present. Club sponsored jointly with Professor Erika King.
- **Hiring Committee Lead Member.** Hiring committee member and organizer for a technology specialist, Spring 2011.
- **Honors Project Field Examiner.** Senior Honors project in computer science, Spring 2011.
- **Programming Team Co-Facilitator.** Association for Computing Machinery (ACM) programming contest departmental team, Oct. 2008 and Oct. 2009. Team co-facilitated with Professor John Vaughn.
- **Review II Committee Member.** Departmental Review II committee, Fall 2009.
- **Conference Trip Co-Organizer.** Hudson River Valley Undergraduate Mathematics Conference, Apr. 2007, and 2008; and Mid-Hudson Valley Undergraduate Mathematics Conference, Oct. 2007. Trips co-organized jointly with Professor Erika King and Professor Jaime Barrera.
- **Curriculum Co-Revisor.** Hobart and William Smith Colleges Computer Science curriculum, Spring 2007 - Fall 2007.
- **Hiring Committee Member.** Hiring committee for an applied mathematician, Spring 2007.
- **Review I Committee Member.** Departmental Review I committee, Spring 2007.
- **Accepted Student Open House Participant.** Hobart and William Smith Colleges Accepted Student Open House, Spring 2007 and 2009. Worked computer science table.

### Within the Colleges:

- **Standards Committee Member.** Committee on Standards (CoS), Fall 2010 - present.
- **Goldwater Reviewer.** Reviewer for HWS Goldwater Scholarship applicants, Jan. 2011.
- **Teagle Group Co-Facilitator.** Critical Thinking Teagle Project Group, Fall 2009 - Spring 2010.
- **Teagle Group Member.** Critical Thinking Teagle Project Group, Fall 2008 - Spring 2010.
- **Faculty Fellow.** Hobart basketball team, Fall 2008 - Spring 2009.
- **Hiring Committee Member.** Hiring committee for the Instructional Technologist position in Information Technology Services (ITS), Summer 2009.
- **FacIT Committee Member.** Faculty Information Technology Committee (FacIT), Fall 2008 - Spring 2009.
- **Computer Workshop Co-Organizer.** Computer workshop for the College Experience program, Fall 2007 - Fall 2009. Workshop run jointly with Professor Mary Kelly.
- **Trustee Scholar Session Speaker/Interviewer.** Session speaker and faculty interviewer at the Trustee Scholar Day, Spring 2009. Gave a presentation on multimedia computing and met with several students.
- **Open House Session Speaker.** Two academic sessions at the Open House, Fall 2008. Gave a presentation on multimedia computing in each session.
- **Senior Honors Project Committee Member.** Elspeth Scott, "Candles in the Night: Exploring Authenticity and Memory", Hobart and William Smith Colleges, May 2008.

## Outside the Colleges:

- **Conference Program Committee Member.** Consortium for Computing Sciences in Colleges, Northeast region (CCSC-NE), 2010 and 2011. Organizing and running the program contest (along with 3 other committee members).
- **NSF Reviewer.** Course, Curriculum, and Laboratory Improvement (CCLI), 2008.
- **Journal/Conference Reviewer.**
  - ACM Operating Systems Review (OSR), 2011.
  - Consortium for Computing Sciences in Colleges – Northeast Region (CCSC-NE) 2010.
  - ACM Tech. Symp. on Computer Science Education (SIGCSE), 2009, 2010, and 2011.
  - ACM Conf. on Innovation and Tech. in Comp. Science Education (ITiCSE), 2009 and 2010.
  - Software-Practice & Experience (SPE), 2006.
  - International Conference on Embedded Software (EMSOFT), 2005.
  - IEEE Transactions on Very Large Scale Integration Systems (TVLSI), 2004.
  - ACM Conf. on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2004.
  - International Symposium on Microarchitecture (MICRO), 2003.
- **Workshop/Tutorial Reviewer.**
  - Consortium for Computing Sciences in Colleges – Northeast Region (CCSC-NE) 2011.
  - Consortium for Computing Sciences in Colleges – Northeast Region (CCSC-NE) 2010.
- **Member.** Association for Computing Machinery (ACM), Jun. 2003 - present.

## Personal Information

Born November 26, 1977 in Bar Harbor, ME.

Married (Stephanie Comeau Corliss).

Open-source software advocate.

Avid Boston Red Sox fan.

Enjoy Indie music.

Play basketball and run in my free time.