Olin Shivers
College of Computer and Information Science
Northeastern University

Spring 2007

Educational background

May 1991 Carnegie Mellon University
Awarded Ph.D. in Computer Science.
Thesis title: *Control-Flow Analysis of Higher-Order Languages.*
Advisors: Professors Peter Lee and Allen Newell.

May 1983 Yale University
Awarded B.S. with double major in Computer Science and Mathematics.

Employment History

Fall 2006–present Northeastern University
Associate professor, College of Computer and Information Science.

Fall 1999–2006 Georgia Institute of Technology
Associate Professor, College of Computing.

Fall 2004 University of Århus, Denmark
Visiting professor, on leave from Georgia Tech.
Taught 60-student undergraduate course, collaborated with research colleagues.

Summer 1999–Summer 2001 Smartleaf Corp.
Founder and Chief Technology Officer

Directed creation of first three generations of Smartleaf's portfolio-optimization software and rollout of server facility, using dynamic languages to reduce development time for critical components of system. The company's clients are currently managing $6B of assets with Smartleaf technology, projected to be $30B in 1Q'07.

1999–2000 ArsDigita
Founder and software engineer

Developed database-backed Web server infrastructure. ArsDigita constructed large, database-backed Web services for clients such as Levi Strauss, Hewlett-Packard, the Environmental Defense Fund and Siemens AG. In 2000, when the founders sold the company, ArsDigita had 80 employees and an annual revenue of 20M$.

Fall 1993–Spring 1999 MIT
Research Scientist, Express project and PIA group.

Co-founded Personal Information Architecture group (joint LCS/Media Lab group); project leader of Express Project in the AI Lab.

Supervised group's doctoral and master's students. Principal author and PI or co-PI of the two DARPA contracts and one NSF grant that funded the Express Project. Express is concerned with the interaction between operating systems, advanced programming languages, compilers, and formal semantics. Our principal research vehicle is ML/OS, an implementation of SML that runs on a bare processor with no OS support.

1992–Summer 1993 University of Hong Kong

Member of the faculty, Computer Science Department.

Fall 1991 AT&T Bell Labs

Post-doc in language research with David MacQueen's Software Principles group.

Summer 1986 Information Technology Center, CMU

Ported Orbit Scheme compiler to the IBM ROMP processor.

Summer 1985 *Centre Mondial Informatique et Ressource Humaine*, Paris

Designed and implemented object-oriented 3D-graphics system.

Summer 1984 DEC Western Research Lab

Member of Jonathan Rees's T group. The group designed and implemented version 3 of the Scheme dialect T, and its optimising compiler, ORBIT. Worked on flow analysis, language design, runtime internals, and the linker.

Summer 1982 MIT AI Lab

Worked for Prof. Randy Davis' Hardware Troubleshooting project. Wrote constraint compiler for DPL implementation language. Designed language extensions. Systems/language work on the Lisp programming environment.

Current fields of interest

My principal research interests are

- The task of constructing robust, complex software artifacts, and the design of tools that assist programmers in this task;
- the interaction between systems and programming languages, primarily higher-order typed languages;
- the semantics of programming languages; and
- compilers.

I. Teaching

A. Courses taught

Spring 2007 Northeastern University

CSU665/CSG262 Compilers

Fall 2006 Northeastern University

CS211 "Introduction to Programming and Computing," first-year course in programming, 160 students.

2000–2006 Georgia Institute of Technology

Semester	Course	Subject	Students
2006 Spring	CS8803SPL	Semantics of Programming Languages	12
2005 Fall	CS4240	Compilers	15
2005 Fall	CS3240	Languages and computation	27
2004 Spring	CS8803	Semantics of Programming Languages	12
2003 Fall	CS4240	Compilers	21
2003 Spring	CS8803	Semantics of Programming Languages	20
2002 Fall	CS4240	Compilers	20
2001 Fall	CS4240	Compilers	30
2001 Spring	CS2340	Objects and design	240
2000 Fall	CS4240	Compilers	25

Fall 2004 University of Århus, Denmark

Undergraduate compilers course, with enrollment of 60 students.

1997 University of Århus, Denmark

Invited mini-course for graduate students on systems programming in advanced programming languages.

1996 MIT

Taught 6.821, graduate student course on programming language semantics, with Prof. David Gifford. Received excellent student evaluations.

1992–1993 University of Hong Kong

Classes included an "Advanced Language Implementation Technology" graduate seminar, "Principles of Programming Languages" undergraduate class, and introductory programming in C. Class sizes varied from 25 to 400. Received excellent student evaluations.

Spring 1986 Carnegie Mellon University

Taught *Introduction to Lisp* undergraduate course. Had sole responsibility for course: wrote and gave all lectures, wrote and graded all assignments and programming projects, assigned final grades. Received outstanding student evaluations.

C. Curriculum development

2004

CS3240: Languages & computation

New required undergraduate course; approved Spring 2004.

2003

Applied semantics of programming languages
New graduate course at Georgia Tech.

D. Individual student guidance

The following list shows the students I've advised, along with the time spent as my advisee, and the title of the student's finished thesis or dissertation.

Doctoral students:

David Zurow, 2003–present, not yet graduated.
Mathew Might, 2002–present, expected graduation: Spring 2007.
David Fisher, 2002–present, not yet graduated.
Alexander Spoon, 2000–2005, *Demand-driven Type Inference with Subgoal Pruning*.
Kostas Arkoudas, 1996–2000, *Denotational Proof Languages*.

Masters students:

Derek Coetzee. Spring 2003. Independent study in type theory.
Andrew Hilton. Summer 2003–present. Project: *Certified program analysis.*
Brett Lucey. Spring 2003. Project: *Analysis and optimisation of push-down automata.*
Ilya Bagrak. Fall 2003–present. Project: *Matching regular trees.*
Steven Strickland, Summer 2002–present. Thesis: *Bottom-up β-reduction.*
Matthew Might and David Egers. Spring 2003. Project: *Call-strings and higher-order control-flow analysis in CPS.*
Brian Carlstrom, 1999–2000. Thesis: *Embedding Scheme in Java.*
Ravi Nanavati, 2000. Thesis: *Extensible syntax in the presence of static analysis.*
James Clark, 1998–2000. Thesis: *Fine-grain interrupts and atomic heap transactions.*
Alexander Vladimirov, 1996–1998. Thesis: *Using FoxNet for TCP/IP Networking in ML/OS.*
Albert Lin, 1996–1998. Thesis: *Concurrency in ML/OS.*

Undergraduate students:

Ben Chambers and Daniel Harvey, Spring 2006. *Design and implementation of an optimising CPS-based compiler.*

Benjamin McMullan. Fall 2003. *Design and implementation of an embedded LALR parser.*

Mike Panetta. Spring 2003. *Design and implementation of an interactive Unix shell based on scsh.*

David Zurow. Fall 2002–present. *Architecture support for low-overhead generational storage management.* David's work is jointly supervised with Ken MacKenzie. I expect this work to become David's Master's thesis.

Steven Strickland and Bryan Kennedy. Summer 2002–Fall 2002. *Bottom-up β-reduction.*

Shyamsundar Jayaraman and Eric Mickley. Summer 2002–Fall 2002. *The multi-return λ calculus.*

Luke Olbrish and Andrew Hilton. Summer 2002–present. *Certifiable program analysis.*

Shyamsundar Jayaraman, Ryan Collins, Tim Snyder. 2001–2002. *Sake, a minimal-recompilation system.*

Bryan Harden. Spring 2002. *Scheme support for ODBC.*

Matt Might, John Hall, Daniel Larsen, Anthony Chen. Fall 2001. CS3911 Senior Design Project: "Civil Engineering Tricorder Project."

I worked with undergraduates at MIT continuously during my time there. The serious projects that actually came to fruition were

David Albertz	Embedding the AWK language into Scheme
Wandy Saetan	Functional PostScript
Brian Carlstrom	Unix sockets API for scsh
David Fisher	Dialogue scripting in Scheme

Some of these were summer UROP projects; Wandy and Brian spent significant for-credit time over several years on their projects. Besides educational value, all of these projects led to software that is actively used.

E. Teaching Honors and Awards

Spring 2003 & 2004 College of Computing nominee for institute-wide Class of 1940 W. Roane Beard Outstanding Teacher Award

Spring 2003
College of Computing's William A. "Gus" Baird Faculty Teaching Award.

II. Research and creative scholarship

A. Doctoral thesis

Control-Flow Analysis of Higher-Order Languages.
I develop techniques for analysing the control-flow structure of languages with first-class procedures and side-effects, such as Scheme or ML. I use the method of non-standard abstract semantic interpretations on a CPS intermediate representation. In the dissertation I (1) develop the control-flow analysis, (2) prove formal properties of the analysis, (3) develop several program optimisations based on the analysis (*e.g.*, induction variable elimination, type recovery), and (4) demonstrate a working implementation of the analysis and optimisation algorithms.

This dissertation was nominated for the 1991 ACM Distinguished Dissertation Prize, and has defined the vocabulary of subsequent inquiry in the area.

B. Published journal papers (refereed)

Static analysis for syntax objects.
David Fisher and Olin Shivers.
Journal of Functional Programming
(invited, under review)

Improving flow analyses via ΓCFA: Abstract garbage collection and counting.
Matthew Might and Olin Shivers.
Journal of Functional Programming
(to appear)

Analysing the environment structure of higher-order languages using frame strings.
Matthew Might and Olin Shivers.
Theoretical Computer Science, May 2007, 375(1–3) pages 137–168.

Multi-return function call.
Olin Shivers and David Fisher.
Journal of Functional Programming, July/September 2006, 16(4) pages 547–582.

Adaptive folds and merge sorts.
Olin Shivers.
Journal of Functional Programming, 2006
(to appear)

A Scheme shell.
Olin Shivers.
Lisp and Symbolic Computation.
(to appear).

C. Published books and parts of books

Data-flow analysis and type recovery in Scheme.
Chapter 3 of *Topics in Advanced Language Implementation*, ed. Peter Lee, MIT Press, 1991.)

E. Conference presentations

E.1 Invited keynote addresses

2005 Harvard University

Invited talk, "A random walk through startup space."
Y Combinator "Startup School." Y Combinator (`ycombinator.com`) is a Boston-area VC partnership with Harvard and MIT roots.

2004 Indiana University

Invited talk, "The anatomy of a loop: A story of scope and control."
Daniel P. Friedman: A Celebration, December 2004.

2004 Northeastern University

Keynote address, "Bottom-up β-substitution: λ-DAGs and uplinks."
New England Programming Languages and Systems Symposium.

2001 MIT AI Lab

Keynote address, "Lambda: the ultimate lightweight language."
Lightweight Languages Workshop.

1997 San Antonio, Texas

Invited talk, "Rehabilitating CPS."
ACM SIGPLAN Workshop on Partial Evaluation and Semantics-Based Program Manipulation (PEPM'99)

1995 St. Petersburg, Florida

Keynote address, "The future of Scheme."
ACM SIGPLAN Scheme Workshop

E.2. Conference presentations with proceedings (refereed)

Model checking via ΓCFA.
Matthew Might, Ben Chambers and Olin Shivers.
In *Proceedings of the Eighth International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI'07)*, Nice, France, January, 2007.

Improving flow analyses via ΓCFA: Abstract garbage collection and counting.
Matthew Might and Olin Shivers.
In *Proceedings of the Eleventh ACM SIGPLAN International Conference on Functional Programming (ICFP'06)*, pages 13–25, Portland, Oregon, September 2006.
Invited for submission to special issue of Journal of Functional Programming.

Static analysis for syntax objects.
David Fisher and Olin Shivers.
In *Proceedings of the Eleventh ACM SIGPLAN International Conference on Functional Programming (ICFP'06)*, pages 111–121, Portland, Oregon, September 2006.
Invited for submission to special issue of Journal of Functional Programming.

Continuations and transducer composition.
Olin Shivers and Matthew Might.
In *Proceedings of the 2006 ACM SIGPLAN Conference on Programming Language Design and*

Implementation (PLDI 2006), Ottawa, Canada, June 2006.

Environmental analysis via ΔCFA.
Matthew Might and Olin Shivers.
In *Proceedings of the 33rd Annual ACM Symposium on Principles of Programming Languages* (POPL 2006), Charleston, South Carolina, January 2006.

Semantic navigation of large code bases in higher-order, dynamically typed languages.
S. Alexander Spoon and Olin Shivers.
In *Proceedings of the 12th Working Conference on Reverse Engineering* (WCRE 2005), Pittsburgh, Penn., November 2005.

Dynamic data polyvariance using source-tagged classes.
S. Alexander Spoon and Olin Shivers.
In *Proceedings of the Dynamic Languages Symposium (DLS05)*, San Diego, California, October 2005.

The anatomy of a loop: a story of scope and control.
Olin Shivers.
In *Proceedings of the 10th ACM SIGPLAN International Conference on Functional Programming* (ICFP 2005), Tallinn, Estonia, September 2005.

Bottom-up β-reduction: uplinks and λ-DAGs.
Olin Shivers and Mitchell Wand.
In *Proceedings of the European Symposium on Programming* (ESOP), April 2005.

Multi-return function call.
Olin Shivers and David Fisher.
In *Proceedings of the 2004 International Conference on Functional Programming*, September, 2004.
Paper selected by program committee for invited submission to *Journal of Functional Programming*.
Invited for submission to special issue of Journal of Functional Programming.

Lexer and parser generators in Scheme.
Matthew Flatt, Benjamin McMullan, Scott Owens and Olin Shivers.
In *Proceedings of the 2004 Workshop on Scheme and Functional Programming*, September 2004.

trx: Regular-tree expressions, now in Scheme.
Ilya Bagrak and Olin Shivers.
In *Proceedings of the 2004 Workshop on Scheme and Functional Programming*, September 2004.

Demand-driven type inference with subgoal pruning: trading precision for scalability.
S. Alexander Spoon and Olin Shivers.
In *Proceedings of the* 18^{th} *European Conference on Object-Oriented Programming*, June 2004.

Higher-order control-flow analysis in retrospect: Lessons learned, lessons abandoned.
Olin Shivers.
In *20 Years of the ACM/SIGPLAN Conference on Programming Language Design and Implementation (1979–1999): A Selection*, April 2004.

Atomic heap transactions and fine-grain interrupts.
Olin Shivers, James W. Clark and Roland McGrath.
In *Proceedings of the 1999 ACM International Conference on Functional Programming (ICFP)*, September, 1999, Paris, France.

The Flux OSKit: A substrate for kernel and language research.
Bryan Ford, Godmar Back, Greg Benson, Jay Lepreau, Albert Lin and Olin Shivers.
In *Proceedings of the Sixteenth ACM Symposium on Operating Systems Principles (SOSP-16)*, October 1997, Saint-Malo, France.

Automatic management of operating-system resources.
In *Proceedings of the Second ACM SIGPLAN International Conference on Functional Programming (ICFP '97)*, June 1997, Amsterdam.

Continuations and threads: Expressing machine concurrency directly in advanced languages.
In *Proceedings of the Second ACM SIGPLAN Workshop on Continuations,* January 1997, Paris.
Also available as BRICS Notes Series NS-96-13, University of Århus, Denmark.

A universal scripting framework.
In *Concurrency and Parallelism, Programming, Networking, and Security,* Lecture Notes in Computer Science #1179, pages 254–265, Editors Joxan Jaffar and Roland H. C. Yap, 1996, Springer.

Supporting dynamic languages on the Java virtual machine.
In *Proceedings of the Dynamic Objects Workshop*, May 1996, Boston.
Also available as technical report AIM-1576, MIT Artificial Intelligence Laboratory.

Useless-variable elimination. In *Proceedings of the Workshop on Static Analysis of Equational, Functional and Logic Programs (JTASPEFL'91)*, pages 197–201, October 1991, Rennes, France. Published as *Bigre* vol. 74, Atelier Irisa, IRISA Campus de Beaulieu.

The semantics of Scheme control-flow analysis.
In *Proceedings of the First ACM SIGPLAN and IFIP Symposium on Partial Evaluation and Semantics-Based Program Manipulation*, June 1991. Published as *SIGPLAN Notices* 26(9):190–198, Association for Computing Machinery, September 1991.
(Also available as Technical Report CMU-CS-91-119, CMU School of Computer Science, Pittsburgh, Penn.)

Control-flow analysis in Scheme.
In *Proceedings of the SIGPLAN '88 Conference on Programming Language Design and Implementation*, June 1988.
(Also available as Technical Report ERGO-88-60, CMU School of Computer Science, Pittsburgh, Penn.)

Varieties of learning in Soar: 1987.
D Steier, G. Yost, J. Laird, A. Newell, P. Rosenbloom, R. Flynn, A. Golding, T. Polk, O. Shivers, A. Unruh.
In *Proceedings of the Fourth International Workshop on Machine Learning*, Pat Langley (editor), Morgan Kaufmann, June 1987.

E.3. Conference presentations with proceedings (non-refereed)

Constraint satisfaction and problem-space structure in Soar.
In *Proceedings of the Fifth Soar Workshop,* September 17, 1988.

Modelling cryptarithmetic puzzle solving for subject S3 of *Human Problem Solving*.
In *Proceedings of the Soar Spring 87 Workshop*, June 20, 1987.

Constraint propagation and macro-compilation in Soar.
In *Proceedings of the Soar Fall 86 Workshop*, November 22, 1986.

E.4. Conference presentations without proceedings

2006. The role of functional languages in high-assurance software.
Invited talk at NSF/NSA Secure Computation Workshop, Sandia National Labs, November 2006.

2002. The multi-return lambda calculus.
IFIP WG 2.8 Workshop on Functional Programming, Las Vegas.

1999. A simple and efficient natural merge sort.
IFIP WG 2.8 Workshop on Functional Programming, St. Malo, France.

1998. Stack types.
IFIP WG 2.8 Workshop on Functional Programming, Warm Springs, Oregon.

1997. Transducer composition and CPS.
IFIP WG 2.8 Workshop on Functional Programming, Harrowgate, England.

F. Other

F.3 Software

2003

Provided reference SML implementation of bottom-up β-reduction algorithm for efficiently manipulating λ-calculus terms to Zhong Shao's group at Yale University for evaluation in FLINT compiler internals.

1993–present `http://scsh.net`

Scsh, the Scheme Shell, is a widely-used sytems programming and scripting environment that runs on any generic Unix platform. Among its applications are VLSI CAD, metereology, financial analysis, system administration, and web servers. I use scsh as a mechanism to explore the issues of systems programming in advanced languages. I have been developing scsh, with my students, since 1993. The seventh major release occurred in January 2003, a significant step, making wide-spread, systemic changes throughout the implementation to accomodate concurrency.

1998 `http://www.gnu.org`

Author of the "comint" family of interactive process-management modules for the emacs text editor. These packages are now a standard part of emacs.

F.4 Published papers (non-refereed)

Bottom-up β-reduction: uplinks and λ-DAGs (extended version).
Olin Shivers and Mitchell Wand.
Technical Report BRICS RS-04-38, DAIMI, Department of Computer Science, University of Århus, December 2004.

SRFIs (Scheme Requests For Implementation) are the current mechanism by which standards are produced for the Scheme language. I have been responsible for the development of five of these,

including the core libraries for list- and string-processing. I am the primary designer and sole author of the final standards, which comprise about half a million characters of text and 7900 lines of supporting reference source code. SRFIs are not "refereed" publications, being standards specifications; the SRFI process, however, includes public review and an assigned editor. The standards can be accessed at `http://srfi.schemers.org`.

SRFI	Title	Date
SRFI-33	Integer Bitwise-operation library	2002/7/15
SRFI-32	Sort libraries	2002/7/15
SRFI-14	Character-set library	2000/12/28
SRFI-13	String library	2000/12/28
SRFI-1	List library	1999/10/9

The SRE regular-expression notation.
August, 1998, MIT AI Lab. Available at URL `http://www.ai.mit.edu/~shivers/sre.txt`.

The scsh manual.
Olin Shivers and Brian Carlstrom. November 1995, scsh release 0.4. MIT Laboratory for Computer Science. Also available as URL `ftp://www-swiss.ai.mit.edu/pub/su/scsh/scsh-manual.ps`.

BodyTalk and the BodyNet: A personal information infrastructure.
Personal Information Architecture Note 1 (December 1, 1993), MIT Laboratory for Computer Science.

G. Research proposals and grants (principal or co-principal investigator)

G.1 Funded and currently submitted

Date	Agency	Title	Amount	
2007	NSF	Analysis and optimisation of transducer structures in a CPS framework	$620k	(Submitted)
2007	NSF	From Scripts to Programs	$914k	(Submitted)
2006	NSF	Certification of Safety-Critical Control Software (co-PI, with Eric Feron & Santosh Pande)	$308k	
2004	NSF	Language towers as design frameworks (PI, with Matthew Flatt and Panagiotis Manolios)	$450k	
2004	NSF	Integrating functional computer-aided reasoning into the Computer-Science curriculum (co-PI, with Panagiotis Manolios and J Strother Moore)	$335k	
2003	Microsoft	Faculty support grant	$30k	
1998	IBM	Faculty support grant	$40k	
1997	ARPA	Dynamic domain architectures (co-PI, with Howard Shrobe)	$3M	
1996	NSF	Programming-language structures for representing and optimizing operating-system resources (PI)	$350k	
1995	ARPA	Express: A programming environment for evolutionary software development (PI)	$350k	

G.2 Declined

Date	Agency	Title	Amount
2004	NSF	Extensible pattern-based reasonin for termination of imperative programs (co-PI, with Panagiotis Manolios and Yannis Smaragdakis)	$470k
2004	NSF	Analysis and optimisation of transducer structures in a CPS framework (PI, with Panagiotis Manolios)	$593k
2004	NSF	CycleFree software for robust real-time control (PI, with Richard LeBlanc)	$637k
2004	NSF	ReFlex: Fexible and reliable systems technologies for responding to massively disruptive events (co-PI, with Ling Liu, Ralph Merkle, Calton Pu, Andre dos Santos)	$4M
2002	NSF	Extensible languages and certified computation (PI, with H. Shrobe & K. Arkoudas)	$580k
2000	NSF	A high-level operating system for component software (co-PI, with K. Dybvig, M. Felleisen, M. Flatt, J. Lepreau, A. Sabry))	$5M
1998	ARPA	An evolutionary modeling and reasoning framework for evolutionary design of complex software (PI, with Howard Shrobe)	
1995	ARPA	Tactical BodyNet Technology: An open architecture, wearable computer system (PI, with Philip Alvelda)	$1,500k
1994	ARPA	BodyNet and BodyTalk: A personal information infrastructure (PI)	$2,100k

H. Research proposals and grants (contributor)

Date	Agency	Title	Amount
1997	ARPA	Computational Video for Collaborative Applications (with David Gifford)	$1.8M

III. Service

A. Professional activities

A.1 Memberships and activities in professional societies

September 1999
Elected member IFIP WG2.8 Working Group on Functional Programming Languages.

A.2 Conference committee activites

Date	Committee	Role	Organisation
2007	Program	Member	Symposium on Trends in Functional Programming (TFP)
2007	Program	Member	European Conference on Object-oriented Programming (ECOOP)
2007	Program	Member	ACM SIGPLAN Symposium on Principles of Programming Languages
2004	Program	Co-chairman	Scheme Workshop
2003	Program	Chairman	ACM SIGPLAN International Conference on Functional Programming
2003	Program	Member	ACM SIGPLAN International Conference on Generative Programming and Component Engineering
2002–2006	Steering	Member	ACM SIGPLAN International Conference on Functional Programming
2000–present	Steering	Member	Scheme Workshop
2002	Program	Member	Lightweight Languages Workshop
2002	Program	Chairman	ACM SIGPLAN Scheme2002 Workshop
2002	Steering	Member	ACM SIGPLAN Scheme2002 Workshop
2002	Program	Member	ACM SIGPLAN International Conference on Functional Programming
2001	Program	Member	ACM SIGPLAN Continuations Workshop
2000	Program	Member	ACM SIGPLAN Scheme Workshop
1996–2000	Steering	Member	ACM SIGPLAN International Conference on Functional Programming
1995	Program	Member	ACM SIGPLAN International Conference on Functional Programming

B. University committees

Date	School	Committee
2006	Northeastern	Ph.D. admissions
2005	Georgia Tech	Undergraduate “threads” curriculum
2004	Georgia Tech	Undergraduate curriculum
		Graduate
2003	Georgia Tech	Computing and Networking Services
2002	Georgia Tech	Faculty-hiring
2001	Georgia Tech	ACTB/Klaus building programming

D. Ph.D. examining committees

Mads Sig Ager, 2004–2006.
Advisor: Olivier Danvy (University of Aarhus).
Dissertation title: *Partial Evaluation of String Matchers and Constructions of Abstract Machines.*

Kevin Atkinson, 2005–present.
Advisors: Matthew Flatt and Gary Lindstrom (University of Utah).
Dissertation title: *ZL: An Extensible System-Programming Language.*

Galen Swint, 2005–present.
Advisor: Calton Pu.
Dissertation title: *Clearwater: Extensible, Flexible and Modular Code Generation of Infopipes.*

Wei Han, Georgia Tech, 2004.
Advisor: Ling Liu.
Dissertation title: *Wrapper Application Generation for the Semantic Web: An XWRAP Approach.*

Brian MacNamara, Georgia Tech, 2004.
Advisor: Yannis Smaragdakis.
Dissertation title: *Multi-paradigm programming.*

Donglin Liang, Georgia Tech, 1999–2002.
Advisor: Mary Jean Harrold.
Dissertation title: *Developing Practical Program Analyses for Programs with Pointers.*

Daniel Damian, University of Århus, defended August 2001.
Advisor: Olivier Danvy.
Dissertation title: *On Static and Dynamic Control-Flow Information in Program Analysis and Transformation.*

Joanna Bryson, MIT Artificial Intelligence Lab, defended April 2001.
Advisor: Lynn Stein.
Dissertation title: *Intelligence by design.*

Dominique Boucher, University of Montreal, defended December, 1999.
Advisor: Marc Feeley.
Dissertation title: *Analyse et optimisation globales de modules compilés séparément à l'édition des liens.*

E. Consulting and advisory appointments

Summer 2005–present Blindsight Corp.
Advisory board. Blindsight develops assistive technology for blind and visually impaired persons.

Fall 2000–present Smartleaf, Inc.
Technical oversight; advisor to CTO.

1999–2000 ArsDigita
Technical consultant and advisor to chairman.

1992–1997 Perot Systems

Advisor to Morton H. Meyerson, company chairman.

1997 Flash Communications

Technical oversight; business strategy; raised all investment capital. Flash developed scalable instant-message services. Company purchased by Microsoft one year after founding; Microsoft IM system is based on Flash technology.

F. Research project reviewer

December 2003	NSERC (Canada)
May 2003	National Science Foundation
January 2001	National Science Foundation

IV. National and international professional recognition

IV.D Patents

"Portfolio Management System." Gerard Michael, Olin Shivers, Eugene Sorets, Mark Linker, Daniel Rie. US Utility Application #09/891,045, June 25, 2001,

IV.E Editorial and reviewer work for technical journals and publishers

November 2006–present Transactions on Programming Languages and Systems

Editorial board.

January 2001–present Journal of Functional Programming

Editorial board.

2005 Higher-order and Symbolic Computation

Co-editor of special issue on the Scheme programming language, issue 18(3/4).

V. Other contributions

V.A Invited papers at meetings and symposia

A partial list of my invited talks: Sandia National Laboratory, École Normale Superieure, University of Copenhagen, Paris VI, Paris VII, Indiana University, Hamilton Institute, Yale, INRIA, University of Århus, Harvard, Y Combinator, NEC, Academia Sinica, Peking Software Institute, IFIP WG2.8 (three times, prior to election), Rice University, University of Hong Kong, University of Montreal, Carnegie-Mellon University, Northeastern University.

V.B Special activities

1998

ICFP '98 programming contest—ran first such contest at the SIGPLAN ACM International Conference on Functional Programming.