

BRIAN J. CORCORAN

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PROFILE

Ph.D. student in Computer Science with a focus on programming language theory; in particular, how programming languages can improve security, concurrent and distributed systems, and databases.

EDUCATION

University of Maryland

Pursuing a Ph.D. in Computer Science

- Advised by Dr. Michael Hicks
- Graduate Research Assistant in the PLUM programming languages group

College Park, Maryland
Sep. 2006–present

Trinity College, University of Dublin

M.Sc. in Computer Science

Concentration in Networks and Distributed Systems

Dublin, Ireland
Oct. 2004–Sep. 2005

Worcester Polytechnic Institute (WPI)

B.Sc. in Computer Science

Minor in Electrical and Computer Engineering

Worcester, Massachusetts
Sep. 2000–May 2004

COMPUTER BACKGROUND

Theory: Compilers, type systems, dataflow analysis, model checking, security, concurrency

Languages: Java, OCaml, Haskell, C, Python, Scheme, Emacs Lisp, Tcl, Perl, PHP, Links, x86 assembly

Databases: PostgreSQL (inc. PL/pgSQL and user-defined types), MySQL, SQL Server

Systems/Algorithms: Distributed systems, IP networking, parallel algorithms, cryptography

Applications: GNU/Emacs, Subversion, CVS, Darcs, L^AT_EX, Eclipse

RESEARCH EXPERIENCE

SELinks/Fable (Ph.D.)

Current research involves designing secure web applications. Helped implement a novel security type system in the Links web programming language (as SELinks). This system allows a wide variety of security policies (e.g., access control, data provenance, information flow) to be provably enforced across the multiple tiers of a web application. Developed two relatively large applications in SELinks, demonstrating that realistic policies can be implemented in real-world applications.

Testing Formal Semantics of Handel-C (M.Sc.)

Developed a tool set (written in Haskell) to support running operational and denotational semantics of the Handel-C programming language. The tool set verified equivalence of the semantics and validated various properties of the language via randomly generated tests.

Presentation Tools for Molecular Visualization (B.Sc.)

Researched, designed, and developed an application used to create and display molecular visualization presentations in CAVE immersive VR devices. Used at Brown University's Technology Center for Advanced Scientific Computation and Visualization (TCASCV).

Teaching Computer Science to Non-Majors (B.Sc.)

Researched and analyzed best practices of teaching introductory Computer Science concepts to students not majoring in Computer Science. Developed a course curriculum customized to each student's major.

PUBLICATIONS

Cross-tier, Label-based Security Enforcement for Web Applications

Brian J. Corcoran, Nikhil Swamy, and Michael Hicks.

In *Proceedings of the ACM SIGMOD International Conference on Management of Data*, June 2009.

Fable: A Language for Enforcing User-defined Security Policies

Nikhil Swamy, Brian J. Corcoran, and Michael Hicks.

In *IEEE Symposium on Security and Privacy (Oakland)*, May 2008.

WORKSHOP PAPERS

Combining Provenance and Security Policies in a Web-based Document Management System (Extended Abstract)

Brian J. Corcoran, Nikhil Swamy, and Michael Hicks.

In On-line Proceedings of the Workshop on Principles of Provenance (PrOPr); Edinburgh, Scotland; Nov. 2007.

TECHNICAL REPORTS

A Framework For Debugging The Formal Semantics of Handel-C

Brian J. Corcoran. (*M.Sc. Dissertation*)

September 2005

TCD-CS-2005-73

Presentation Tools for Molecular Visualization (MQP)

Brian J. Corcoran, Bradley K. Noyes, and Steven Willis.

December 2003

WPI-MQP-MOW-0304

An Introductory CS Course for Non-Majors (IQP)

Brian J. Corcoran and Bradley K. Noyes.

May 2003

WPI-IQP-CK-IB02

WORK EXPERIENCE

USI Consulting Group

Business Systems Consultant

Glastonbury, Connecticut

2005–2006

Systems Engineer in the Health and Welfare department of a Third-Party Administrator. Work included developing in-house database applications, including an electronic data interchange (EDI) application (written in VB.NET). Designed and implemented a file transfer scripting language (in Tcl).

SolidWorks Corporation

Intern, Computer Information Services

Concord, Massachusetts

Summers 2001, 2002

Developed a secure downloading system for application updates (in Perl and ColdFusion), and configured and tested IBM AIX and Sun Solaris systems for development.

ASA Real Estate Services

Systems Developer

Newington, Connecticut

1997–2000

Consultant

2000–2003

Primary developer/system administrator for a 30-employee company. Designed and implemented an EDI suite of tools (in Perl), implemented an e-commerce system (in PHP), and developed in-house order-handling and report-generating systems (written in FoxPro and MySQL).

TEACHING EXPERIENCE

Graduate Teaching Assistant (University of Maryland)

- CMSC 131 : Introduction to Programming in Java; Fall 2006 and Spring 2007

Undergraduate Teaching Assistant (Worcester Polytechnic Institute)

- CS 4731 : Computer Graphics; Fall 2003 A Term
- CS 2136 : Paradigms of Computation; Fall 2003 B Term

HONORS

- Graduated from Trinity College with First-Class Honours degree
- Graduated from WPI with high distinction
- Member of TIIE (International Computer Science Honor Society)

REFERENCES

Available upon request