ADRIANA COMPAGNONI

Stevens Institute of Technology
Department of Computer Science
Castle Point on Hudson
Hoboken, NJ 07030

Curriculum Vitae

EDUCATION AND CREDENTIALS

Ph.D. in Computer Science, 1995 – Katholieke Universiteit Nijmegen, The Netherlands

Dissertation: "Higher-Order Subtyping with Intersection Types"

Master & Bachelor of Science in Computer Science (equ), 1989 – Escuela Superior Latino-Americana de Informática, Buenos Aires, Argentina

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TEACHING EXPERIENCE

STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, New Jersey 1998 to Present

Associate Professor

Instruct undergraduate and graduate students in Programming Languages and Theory of Computation. Develop innovative approaches to maintain student enthusiasm, continuously refining courses and approaches to ensure accessibility and currency of content. Encourage active learning through participatory exercises. Provide undergraduate advising. Supervise and mentor post-doctoral associates and Ph.D. candidates, overseeing research activities.

- Developed new courses, Semantics of Programming Languages and Certifying Compilers, and revamped existing course, Theory of Computation.
- Designed a new Secure Code Production Graduate Certification Program oriented toward students already engaged in professional technical careers allowing them to learn and apply latest techniques within selected disciplines.
- Proposed enhancements to the Ph.D. program geared toward attracting high caliber graduate students in order to strengthen the institute's research environment and reputation.

PROFESSIONAL EXPERIENCE

Fellowships

UNIVERSITY OF EDINBURGH, Scotland 1997 - 1998
European Community Individual Research Fellowship

UNIVERSITY OF CAMBRIDGE, England 1996 - 1997
European Community Individual Research Fellowship

UNIVERSITY OF CAMBRIDGE, England 1995 - 1996
EuroFOCS Postdoctoral European Research Fellowship

Selected Lectures, Seminars, Symposia, & Panels

NEW JERSEY PROGRAMMING LANGUAGES AND SYSTEMS SEMINAR April, 2009

Princeton, New Jersey

Continued…

Seminar: "Relating Church Style and Curry Style Subtyping."

INTERNATIONAL WORKSHOP ON PROOF-CARRYING CODE — August, 2006
Seattle, Washington
Workshop Chair, Speaker: "Information Flow Analysis for Low-Level Languages"

RUTGERS UNIVERSITY, Newark, New Jersey — February, 2006
Seminar: "Mobile Access Control."

NSF CYBER TRUST ANNUAL PRINCIPAL INVESTIGATOR MEETING, — September, 2005
Newport Beach, California
Panel Discussion: "Responding to NSF's Call to Broaden Participation in Computing."

UNIVERSITY OF TURIN, Turin, Italy — June, 2005
Lecture: "Non-Interference for a Typed Language Assembly."

UNIVERSITY OF TURIN, Turin, Italy — June, 2003
Lecture: "Correspondence Assertions for Process Synchronization in Concurrent Communication."

PRINCETON UNIVERSITY, Princeton, New Jersey — May, 2003
Seminar: "Dependent Session Types for Safety in Distributed Communications."

DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA), — April, 2003
Arlington, Virginia
Discussion: "Language-Based Security."

UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pennsylvania — April, 2003
Seminar: "Dependent Session Types for Safety in Concurrent Communications."

STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, New Jersey — February, 2002
Seminar: "A Linearly Typed Assembly Language for Safe Reuse of Memory."

TOKYO INSTITUTE OF TECHNOLOGY, Tokyo, Japan — October, 2001
Seminar: "A Heap Bounded Assembly Language."

STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, New Jersey — June, 2001
Forum: "Excellence in High-Assurance and Secure Systems."

EDINBURGH UNIVERSITY, Edinburgh, Scotland — March, 2000
Lecture: "Anti-Symmetry of Higher Order Subtyping."

UNIVERSIDAD NACIONAL DE LA PLATA, Argentina — July, 1998
Lecture Series: "Foundations of Calculi with Subtypes and Objects."

RESEARCH PROJECTS

Computational Systems Biology. Concurrent Calculi (September 2008 to Present)
- Identify microbiology mechanisms that can be modeled with concurrent calculi.

A Correct Java Compiler (October 2007 to Present)
- Create a verified translation of Java and Featherweight Java to C Minor.

Mobile Access Control (September 2005 to August 2006)
- Utilization of mobile device relocation functionality by access control mechanisms.

Trust Management for Mobile Access Control (November 2005 to October 2006)
- Define and implement a mobile role-based access control language and programming environment.

Continued…

Location Awareness in Access Control (September 2004 to Present)

- Development of Distributed Role-based Access Control (RBAC) preventing security violations in the form of 1) attempting to enter an ambient without authorization, and 2) attempting to read or write from ports without permissions

NSF CAREER: A Formally Verified Environment for the Production of Secure Software (February 2001 to January 2010)

- Production of Proof-Carrying Code (PCC) conforming to a predetermined safety policy and development of verified compilers that can only compile code in accordance with aforementioned safety policy.

Information Flow Analysis (November 2002 to Present)

- Study of type systems for guaranteeing secure information flow in assembly languages.

NSF ITR: Secure Electronic Transactions (September 2002 to January 2006)

- Development and improvement of audit trails and privacy in secure electronic transactions.

Correspondence Assertions for Process Synchronization in Concurrent Communications (October 2002 to February 2005)

- Regulation of information exchange within a session by type, which determines the kind of information being exchanged and the direction it should flow.

Typed Operational Semantics for Subtyping (June 1997 to May 2005)

- Demonstrate that logical relations can be used to show decidability of subtyping.

GRANTS

Picatinny Arsenal
PI: Adriana Compagnoni
Project Title: Mobile Access Control
Total Award Period: 9/1/2005 – 8/31/2006
Total Award Amount: $70,000
Location of the Project: Stevens Institute of Technology

Office of Technology Initiatives - Stevens
PI: Adriana Compagnoni
Project Title: Trust Management for Mobile Access Control
Total Award Period: 9/1/2005 – 10/31.2006
Total Award Amount: $93,313
Location of the Project: Stevens Institute of Technology

NSF
PI: Adriana Compagnoni
Project Title: CAREER: A Formally Verified Environment for the Production of Secure Software – REU Supplement: Information-Flow Analysis For Low-Level Programming Languages
Total Award Amount: $12,000
Total Award Period: 6/1/2005 - 3/31/2006
Location of the Project: Stevens Institute of Technology

AT&T
Title: XQueries on PADS: integration of tools for the querying of arbitrary data streams. AT&T Internship
Intern: Ricardo Medel
Total Award Amount: $15,795
Total Award Period: 6/2/2003 - 8/28/2003
Location of the Project: AT&T

Continued…

NSF
PI: Adriana Compagnoni, CoPIs: Elsa Gunter (NJIT) and Arnold Urken (Stevens).
Pro ject Title: ITR: Secure Electronic Transactions – REU Supplement Experimentation Tools for a Language of Secure Electronic Transactions
Total Award Amount: $10,000
Total Award Period: 6/1/2003 -8/31/2003
Location of the Project: Stevens Institute of Technology

NSF
PI: Adriana Compagnoni, CoPIs: Elsa Gunter (NJIT) and Arnold Urken (Stevens).
Project Title: ITR: Secure Electronic Transactions
Total Award Amount: $416,256
Total Award Period: 9/1/2002 -8/31/2005
Location of the Project: Stevens Institute of Technology

NSF
PI: Adriana Compagnoni
Project Title: CAREER: A Formally Verified Environment for the Production of Secure Software
Total Award Amount: $333,307
Total Award Period: 4/1/01 - 1/31/10
Location of the Project: Stevens Institute of Technology

Stevens Technogenesis Fund
PI: Adriana Compagnoni
Project title: Excellence in High-Assurance and Secure Systems – Postdoctoral Fellowship
Total Award Amount: $51,500
Total Award Period: 10/1/2002 - 9/30/2003
Location of the Project: Stevens Institute of Technology

Cadence
Title: Cadence Internship
Intern: Ricardo Medel
Total Award Amount: $12,000
Total Award Period: 6/1/2002 - 8/31/2002
Location of the Project: Cadence.

AT&T
Title: AT&T Internship
Intern: Mihaela Bucur
Total Amount: $4,672
Total Award Period: Spring 2001
Location of the Project: AT&T

NSF
PI: Andre Scedrov (UPenn), CoPIs: Iliano Cervesato, Adriana Compagnoni, Radha Jagadeesan, Dale Miller, John Mitchell, and George Necula.
Project Title:U.S.-Japan Cooperative Science: Logical Methods for Formal Verification of Software, INT-9815731.
Total Award Amount: $67,670
Total Award Period: 6/1/1999-5/30/2002
Location of the Project: UPenn

Continued…

NJCS&T
PI: D. Duggan (Stevens), CoPIs: D. Klappholz, S. Bloom, A. Compagnoni, D. Naumann (Stevens), N. Minsky, T. Nguyen (Rutgers), J. Geller, R. Scherl, Y. Peri (NJIT).
Title of the Project: Software Engineering for Distributed Computing and Networking
Total Award Amount: $557,297
Total Award Period: 6/1/2000 - 5/31/2005
Location of the Project: Stevens Institute of Technology

PUBLICATIONS

PhD Thesis

1. Compagnoni, Adriana, *Higher-Order Subtyping with Intersection Types Inheritance*, Katholieke Universiteit Nijmegen, 1995. Supervisors: Henk Barendregt and Mariangiola Dezani-Ciancaglini.

Articles

1. Bidinger, Philippe, and Compagnoni, Adriana " Pict Correctness Revisited," Theoretical Computer Science. Volume 410 , Issue 2-3, pages 114-127, February 2009.
2. Compagnoni, Adriana, Gunter, Elsa, and Bidinger, Philippe "Role-based Access Control for Boxed Ambients," Theoretical Computer Science. Volume 398 , Issue 1-3, pages 203-216, May 2008.
3. Garralda, Pablo, Bonelli, Eduardo, Compagnoni, Adriana, and Dezani-Ciancaglini, Mariangiola, "Boxed Ambients with Communication Interfaces," *Mathematical Structures in Computer Science*, Volume 17, Issue 4, pages 587-645, August 2007.
4. Compagnoni, Adriana, and Goguen, Healfdene, "Anti-Symmetry of Higher-Order Subtyping and Equality by Subtyping," *Mathematical Structures in Computer Science*, Volume 16, Issue 1, pages 41-65, February, 2006.
5. Compagnoni, Adriana, "Higher-Order Subtyping and its Decidability," *Information and Computation*, Volume 191, Issue 1, pages 41-113, May, 2004.
6. Bonelli, Eduardo, Compagnoni, Adrianna, and Gunter, Elsa, "Correspondence Assertions for Process Synchronization in Concurrent Communications," *Journal of Functional Programming*, Volume 15, Issue 2, pages 219-147, April, 2004.
7. Aspinall, David, and Compagnoni, Adriana, "Heap Bounded Assembly Language," *Journal of Automated Reasoning*, Volume 31, Issues 3-4, pages 261-302, September, 2003.
8. Compagnoni, Adriana, and Goguen, Healfdene, "Typed Operational Semantics for Higher Order Subtyping," *Information and Computation*, Volume 184, Issue 2, pages 242-297, August, 2003.
9. Castagna, Giseppe, and Compagnoni, Adriana, "Seventh International Workshop on Foundations of Object-Oriented Languages," *Information and Computation*, Volume 177, Issue 1, page 1, August, 2002.
10. Aspinall, David, and Compagnoni, Adriana, "Subtyping Dependent Types," *Theoretical Computer Science*, Volume 266, pages 273-309, September, 2001.
11. Compagnoni, Adriana, and Pierce, Benjamin, "Higher Order Intersection Types and Multiple Inheritance," *Mathematical Structures in Computer Science*, Volume 6, pages 469-501, October, 1996.

Conference Papers

1. Bonelli, Eduardo and Compagnoni, Adriana. "Multipoint Session Types for a Distributed Calculus" In Proceedings of the Third Symposium on Trustworthy Global Computing (TGC 2007), Sophia-Antipolis, France, November 5-6, 2007. Selected Papers. LNCS 4912, pages 240-256, March 2008.

Continued…

2. Compagnoni, Adriana, and Goguen. Healfdene, "Subtyping a la Church." December 2007. Festschrift in Honor of Henk Barendregt. Radboud University Nijmegen.
3. Bidinger, Philippe and Compagnoni, Adriana. "Pict Correctness Revisited". In Proceedings of the Ninth IFIP WG 6.1 International Conference, Formal Methods for Open Object-Based Distributed Systems (FMOODS '07), Paphos, Cyprus, June 6-8, 2007, LNCS 4468, pages 206-220, June 2007.
4. Garralda, Pablo, Compagnoni, Adriana, and Dezani-Ciancaglini, Mariangiola, "BASS: Boxed Ambients with Safe Sessions". In Proceedings of the Eighth International ACM SIGPLAN Conference on Principles and Practice of Declarative Programming(PPDP '06), Venice, Italy, pages 61-72, July, 2006.
5. Bonelli, Eduardo, Compagnoni, Adriana, and Medel, Ricardo, "Information-Flow Analysis for a Typed Assembly Language with Polymorphic Stacks". In Proceedings of the Second International Workshop on Construction and Analysis of Safe, Secure, and Interoperable Smart Devices (CASSIS '05), Nice, France, March, 2005. LNCS 3956, pages 37-56, April, 2006.
6. Medel, Ricardo, Compagnoni, Adriana, and Bonelli, Eduardo, "A Typed Assembly Language for Non-Interference". In Proceedings of the Ninth Italian Conference on Theoretical Computer Science (ICTCS '05), Siena, Italy, LNCS 3701, pages 360-374, October, 2005.
7. Bonelli, Eduardo, Compagnoni, Adriana, and Gunter, Elsa, "Typechecking Safe Process Synchronization". In Proceedings of the Workshop on the Foundations of Global Ubiquitous Computing (FGUC '04), London, England, September 2004. Electronic Notes in Theoretical Computer Science, Volume 138, Issue 1, pages 3-22, September, 2005.
8. Medel, Ricardo, Compagnoni, Adriana, and Bonelli, Eduardo, "Non-Interference for a Typed Assembly Language," Foundations of Computer Security (FCS '05), Chicago, Illinois, July, 2005.
9. Garralda, Pablo, and Compagnoni, Adriana, "Splitting Mobility and Communication in Boxed Ambients". In Proceedings of the International Workshop on Developments in Computational Models (DCM '05), Lisbon, Portugal, July, 2005. Electronic Notes in Theoretical Computer Science, Volume 135, Issue 3, Pages 61-71. March 2006.
10. Bonelli, Eduardo, Compagnoni, Adriana, and Gunter, Elsa, "Correspondence Assertions for Process Synchronization in Concurrent Communications". In Proceedings of the Second International Workshop on Foundations of Coordination Languages and Software Architectures (FOCLASA '03), Marseille, France, September, 2003. Electronic Notes in Theoretical Computer Science, Volume 97, pages 175-195, September, 2004.
11. Bonelli, Eduardo, Compagnoni, Adriana, Dezani-Ciancaglini, Mariangiola, and Garralda, Pablo, "Boxed Ambients with Communication Interfaces". In Proceedings of the 29th International Symposium on Mathematical Foundations of Computer Science (MFCS '04), Prague, Czech Republic, LNCS 3153, pages 119-148, August, 2004.
12. Medel, Ricardo, Lucotte, Matthieu, and Compagnoni, Adriana, "Implementing a Typed Assembly Language and its Machine Model," Argentinean Conference of Computer Science (CACIC' 02), Buenos Aires, Argentina, October, 2002.
13. Compagnoni, Adriana, and Goguen, Healfdene, "Anti-Symmetry of Higher-Order Subtyping". In Proceedings of the 8th Annual Conference on Computer Science Logic (CSL '99), Madrid, Spain, LNCS 1683, pages 420-438. September, 1999.
14. Duggan, Dominic, and Compagnoni, Adriana, "Subtyping for Object Type Constructors," 6th Workshop on Foundations of Object-Oriented Languages (FOOL 6), San Antonio, Texas, January, 1999.
15. Compagnoni, Adriana, and Fernandez, Maribel, "An Object Calculus with Algebraic Rewriting". In Proceedings of the 9th International Symposium on Programming Languages: Implementations, Logics, and Programs (PLILP '97), Southampton, England, LNCS 1292, pages 17-31, September, 1997.

Continued…

16. Aspinall, David, and Compagnoni, Adriana, "Subtyping Dependent Types" In Proceedings of the 11th IEEE Symposium on Logic in Computer Science (LICS '96), New Brunswick, New Jersey, July, 1996.
17. Compagnoni, Adriana, "Decidability of Higher-Order Subtyping with Intersection Types". In the Proceedings of the Annual Conference of the European Association for Computer Science Logic (CSL '94), Kazimierz, Poland, LNCS 933, pages 46-60, January, 1994.
18. Compagnoni, Adriana, and Gaspes, Veronica, "A Type Theory for ML". In the Proceedings of the 10th International Conference of the Chilean Computer Science Society, Santiago, Chile, November, 1990.

SCHOLARLY ACTIVITIES

European Project Reviewer
Mobius Project, November, 2008

Guest Editor
Information and Computation, August, 2002
Mathematical Structures in Computer Science, Forthcoming, 2007

NSF Panel Reviewer 2003 and 2005

Program Committee Chair
First International Workshop on Proof-Carrying Code, 2006

Program Committee Member
Ninth International Workshop on Reduction Strategies in Rewriting and Programming, 2009
The European Symposium on Programming, 2008
Programming Languages and Analysis for Security, 2007
Tenth Brazilian Symposium on Programming Languages, 2006
ACM SIGPLAN Workshop on Programming Languages and Analysis for Security, 2006
Ninth Brazilian Symposium on Programming Languages, 2005
Seventh International Conference on Typed Lambda Calculi and Applications, 2005
Trustworthy Global Computing, 2005
First Conference on the Principles of Software Engineering, 2004
Ninth ACM SIGPLAN International Conference on Functional Programming, 2004

Journal Reviewer
ACM Transaction on Computational Logic (TOCL)
ACM Transactions on Programming Languages (TOPLAS)
Acta Informaticæ
Fundamenta Informaticæ
Information and Computation
Journal of Functional Programming
Journal of Automated Reasoning. Special Issue on Logical Frameworks and Metalanguages
Journal of the ACM
Mathematical Structures in Computer Science.
Theoretical Computer Science.

Chair of Faculty Library Committee, Stevens Institute of Technology (2005-2007)

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GRADUATE STUDENTS AND POST-DOCS

Graduate Student

Ricardo Medel, Ph.D.
Thesis Title: Typed Assembly Languages For Software Security
Defense date: December 7, 2006
Awards: Best Stevens CS Graduate Student Award 2003

Pablo Garralda
Thesis title: Boxed Ambients for Global Computing
Defense date: April 2, 2007
Secure Electronic Transactions Project
Best ISSA CS Graduate Student Award 2004

Bao Yifei
Computational Systems Biology Project. Modeling the Nuclear Pore Complex
From September 2008.

Matthieu Lucotte, MSc
Now working at Bloomberg, NY.

Post-docs

Eduardo Bonelli, Ph.D.
(October 2002 - February 2005)
Secure Electronic Transactions project.
Now at LIFIA, Argentina.

Philippe Bidinger, Ph.D.
(November 2005-October 2006)
Mobile Access Control project.
Now at Verimag, Grenoble, France.

AWARDS

National Science Foundation Information Technology Research (ITR) Award (2002)
National Science Foundation CAREER Award (2001)

PROFESSIONAL ASSOCIATIONS

Association for Computing Machinery (ACM)
Special Interest Group for Programming Languages (SIGPLAN)
Institute of Electrical and Electronics Engineers (IEEE)

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LANGUAGES

English, Spanish, Dutch, Italian