Luca Cardelli • Curriculum Vitae • 2014

Short Bio

Luca Cardelli was born near Montecatini Terme, Italy, studied at the University of Pisa (until 1978-07-12), and has a Ph.D. in computer science from the University of Edinburgh(1982-04-01). He worked at Bell Labs, Murray Hill, from 1982-04-05 to 1985-09-20, and at Digital Equipment Corporation, Systems Research Center in Palo Alto, from 1985-09-30 to 1997-10-31, before assuming a position on 1997-11-03 at Microsoft Research, in Cambridge UK, where he was head of the Programming Principles and Tools andSecurity groups until 2012, and is currently a Principal Researcher.

His main interests are in type theory and operational semantics (for applications to language design, semantics, and implementation), and in concurrency theory (for applications to computer networks and to modeling biological systems). He implemented the first compiler for ML (one of the most popular typed functional language, whose recent incarnations are Caml and F#) and one of the earliest direct-manipulation user-interface editors. He was a member of the Modula-3 design committee, and has designed a few experimental languages, including Obliq: a distributed higher-order scripting language (voted most influential POPL'95 paper 10 years later), and Polyphonic C#, a distributed extension of C#. His more protracted research activity has been in establishing the semantic and type-theoretic foundations of object-oriented languages, resulting in the 1996 book "A Theory of Objects" with Martin Abadi. More recently he has focused on modeling global and mobile computation, via the Ambient Calculus andSpatial Logics, which indirectly led to a current interest in Systems Biology , Molecular Programming, and Stochastic Systems.

He has published over 100 papers, 1 book, and 3 proceedings as chair/editor (POPL'98, ECOOP'03, and DNA 2011). He has served in over 80 Program Committees, and as editor of Theoretical Computer Science - Natural Computing (Elsevier 2008..), Foundations and Trends in Theoretical Computer Science (Now Publishers, 2005..), Transactions in Computational Systems Biology (Springer 2004..),Mathematical Structures in Computer Science (CUP 2001..2007), Science of Computer Programming (North Holland 1999..2006), Journal of Functional Programming (CUP 1995..2004), and Theory and Practice of Object Systems (Wiley 1994..1999).

He is a Fellow of the Royal Society, an ACM Fellow, an Elected Member of the Academia Europaea, an Elected Member of AITO, and a long-standing member of EATCS. His web page is at lucacardelli.name.

Shorter Bio

Luca Cardelli has a Ph.D. in computer science from the University of Edinburgh. He worked at Bell Labs, Murray Hill, from 1982 to 1985, and at Digital Equipment Corporation,Systems Research Center in Palo Alto, from 1985 to 1997, before assuming a position at Microsoft Research, in Cambridge UK, where he was head of the Programming Principles and Tools and Security groups until 2012. Since 2014 he is also a Royal Society Research Professor at the University of Oxford.

His main interests are in programming languages and concurrency, and more recently in programmable biology and nanotechnology. He is a Fellow of the Royal Society, a Fellow of the Association for Computing Machinery, an Elected Member of the Academia Europaea, and an Elected Member of the Association Internationale pour les Technologies Objets. His web page is at lucacardelli.name.

Shorterer Bio with Links

Luca Cardelli joined Microsoft Research in 1997 and headed the Programming Principles and Tools and Security groups from 2000 to 2012. After working on the foundations of object-oriented programming, an underlying interest in concurrency led him from computing to systems biology and to molecular programming. Currently, his favorite concurrent programming paradigm is the quantitative framework of Chemical Reaction Networks.

On Google Scholar: http://scholar.google.com/citations?user=npBTgSsAAAAJ&hl=en.

Research Interests

Programming Languages and Type Theory
Polymorphism, subtyping, objects, modularization, typechecking, semistructured data.
Distributed Systems and Concurrency
Concurrent programming, distribution, mobility, global computation, process calculi, logics for concurrency.
Computational Biology
Molecular Programming, Systems Biology, Natural Computation, Quantitative Semantics.

Education

- PhD in Computer Science, Edinburgh University (1982-04-01).
- "Laurea" in Computer Science, University of Pisa (1978-07-12).

Employment

- University of Oxford, Department of Computer Science: Royal Society Research Professor (2013-10-01..2023-09-30).

- Microsoft Research, Cambridge UK (1997-11-03..Present). Researcher (1997-11-03), Assistant Director(2000-07-19), Principal Researcher (2006-11-23..Present). Head of the Programming Principles and Tools Group and the Security Group (2000-2012).
- Digital Equipment Corporation, Systems Research Center, Palo Alto (1985-09-30..1997-10-31). Member of Research Staff.
- Department of Computer and Information Science, University of Pennsylvania, Philadelphia (1984-01..1984-12). Adjunct Professor.
- AT&T Bell Laboratories, Murray Hill (1982-04-05..1985-09-20). Member of Technical Staff.
- Associations and Awards
- ACM SIGPLAN Programming Languages Achievement Award (2015)
- Royal Society Research Professor (2013).
- Fellow of The Royal Society (2005).
- ACM Fellow (2005).
- Academia Europaea Elected Member (Informatics) (2006).
- AITO Elected Member (2004).
- Top Cited Article 2005-2010, Theoretical Computer Science [for "On Process Rate Semantics"].
- Most Influential POPL Paper Award 2010 (for 2000) [for "Anytime, Anywhere. Modal Logics for Mobile Ambients"].
- AITO Dahl-Nygaard Senior Prize 2007 [Talk:]
- Most Influential ETAPS 1998 Paper Award (Awarded 2007) [for "Mobile Ambients"].
- Most Influential POPL Paper Award 2005 (for 1995) [for "A Language with Distributed Scope"].
- Fellow of Linacre College (2014-04-23..).
- Visiting Professor at the University of Oxford, Computing Laboratory (2010-09-01..2013-09-30).
- Visiting Professor at Imperial College London, Department of Computing (2007-03-01..2012-12-31).
- Visiting Professor at Trento, Department of Information and Communication Technology (2005..2007).
- Member of EATCS (European Association for Theoretical Computer Science).
- Member of ISCB (International Society for Computational Biology).
- Fellow of Girton College (1998..2004).

Courses, Tutorials, and Lecture Series

- "Molecular Programming" Tutorial, Microsoft Research Cambridge, February 11, 2010.
- "Molecules as Automata" Graduate Course, University of Warsaw, March 12-13 and May 7-8, 2009.
- "Molecules as Automata" International Summer School on Natural Computing, Bertinoro, September 21, 2008.
- "Artificial Biochemistry" Graduate Course, University of Trento, May 22-26, 2006.
- "Abstract Machines of Systems Biology" Summer School on Biology Computation and Information, Dobbiaco, September 12-16, 2005.

- "Mobility and Spatial Logic", Lecture Series, 5th International School on Formal Methods for the Design of Computer, Communication and Software Systems: Mobile Computing, Bertinoro, April 26-30, 2005.
- "Membrane Interactions", Lecture Series, International School on Computational Sciences for Complex Systems in Biology, Rovereto, April 17-24 2004.
- "Mobility and Spatial Logic", Lecture Series, 30eme Ecole de Printemps, Agay, March 24-29, 2002.
- "Computation on Wide Area Networks", Lecture Series, Lipari Summer School, July 1-14 2001.
- "Computation on Wide Area Networks", Cambridge University Minicourse Lectures, May 8,9,15,16 2001
- "Mobility and Security", Lecture Series, Marktoberdorf Summer School, July 27 - Aug 6 1999.
- "A Theory of Objects", Lecture Series, University of Technology Sydney, August 4-15 1997.
- "A Theory of Objects", ECOOP Tutorial (with Martín Abadi), Jyväskylä, June 9-13, 1997.
- "A Theory of Objects", OOPSLA Tutorial (with Martín Abadi), San Jose October 6-10, 1996.
- "Object-Oriented Features", Lecture Series, ACM School on Functional and Object-Oriented Programming (with Martín Abadi), Sobotka, Poland, September 8-14, 1996.
- "Class-based vs. Object-based Languages", PLDI Tutorial, 1996.
- "Type-Driven Language Design", PLDI Tutorial, 1995.
- "Typed Foundations of Object-Oriented Programming", POPL Tutorial, 1992.
- "Typeful Programming", Lecture Series, IFIP State of the Art Seminar on Formal Description of Programming Concepts, Bombay, Feb 21-27, 1992.
- "Typeful Programming", Lecture Series, IFIP State of the Art Seminar on Formal Description of Programming Concepts, CEDAV Serpro, Petropolis, Rio de Janeiro, Brazil, 18-28 April 1989.
- "Semantic methods for object-oriented languages", OOPSLA Tutorial (with John Mitchell), 1988.
- "Data Abstraction, Modularization, and Reusability", Lecture Series, University of Texas Year of Programming, 1986.
- "Advanced Topics in Programming Languages", One-semester Course (with Dave MacQueen), University of Pennsylvania, Department of Computer and Information Science, 1984.

Scientific Boards

- (2015-01-01..2017-12-31) Member of the Royal Society Research Appointments Panel A(iii)
- (2011-03..2015-02) Member of INRIA's Scientific Board.
- (2012..) Member of the MSR-INRIA Joint Centre Management Committee.
- (2011..) Member of the Advisory Board for the Saarbruecken Graduate School in Computer Science.
- (Aug2009..) Member of the Steering Committee for the annual conference on DNA Computing and Molecular Programming.
- (2004..) Member of the Microsoft Research - University of Trento Centre for Computational and Systems Biology Board of Directors.

- (Jan2010..Dec2012) Member of the Royal Society Dorothy Hodgkin Fellowship Selection Panel - A Side.
- (2009..2012) Member of the Advisory Board for CRISP Consortium (BBSRC Combinatorial Responses in Stress Pathways)
- (2008..2012) Member of the Scientific Advisory Board for CSBE (BBSRC EPSRC Centre for Systems Biology at Edinburgh)
- (May2007..Dec2009) Member of the Royal Society Industry Fellowship Scheme Joint Panel.
- (Jan2007..Mar2009) Member of the Royal Society Sectional Committee 1.
- (Jan2006..Dec2008) Member of the Royal Society and Académie des Sciences Microsoft European Science Award Committee.
- (Jan2006..Jul2007) Member of the Royal Society Research Grants Board A.
- (2004..2007) Member of the PhD Thesis External Review Committee of the ICT Graduate School, University of Trento.

Editorial Boards

- (2014..) Subject Editor for Computer Science, Royal Society Open Science.
- (2012..) Member of the Editorial Board, Electronic Proceedings in Theoretical Computer Science (arXiv-published open access journal).
- (2008..) Member of the Editorial Board, Theoretical Computer Science journal, series C - Theory of Natural Computing (TCS-C), Elsevier.
- (2004..2012) Member of the Editorial Board, Transactions on Computational Systems Biology, Springer.
- (2001..2007) Member of the Scientific Board, Mathematical Structures in Computer Science (MSCS), Cambridge University Press.
- (1999..2006) Member of the Editorial Board, Science of Computer Programming (SCP), North Holland.
- (1995..2004) Member of the Editorial Board, Journal of Functional Programming (JFP), Cambridge University Press.
- (1994..1999) Associate Editor, Theory and Practice of Object Systems (TAPOS), Wiley.

Program Committees

- 2011: Program co-chair of the International Conference on DNA Computing and Molecular Programming (DNA17).
- 2003: Program chair of the European Conference on Object Oriented Programming (ECOOP'03).
- 1998: Program chair of the ACM Symposium on Principles of Programming Languages (POPL'98).
- HSB'15, DNA21, CMSB'15, DNA20, MeCBIC'14, CS2Bio'14, MeCBIC'13, Advances in Molecular Programming and Computing workshop'13, CS2Bio'13, MFPS XXIX, CMSB'13, DNA19, MeCBIC'12, CS2Bio'12, DNA18, CMSB'12, CONCUR'12, Computability in Europe'12, DNA17 (Cochair), CS2Bio'11, SASB'11, MeCBIC'10, AlgebraicNumericBiology'10, CS2Bio'10, CONCUR'10, UnconventionalComputation'10, DNA16, FBTC'10, Static Analysis in Systems Biology'10 WS, ICSB'10 (Scientific Committee), Developments in Computational

Models'09 WS, EXPRESS'09 WS, UnconventionalComputation'09, MeCBIC'08, FBTC'08, ECCB'08, AlgebraicBiology'08, CMSB'08, CMSB'07, NETTAB'07,AlgebraicBiology'07, QALP'07, FBTC'07, CONCUR'07, CMSB'06, ECOOP'06, FOSSACS'06, BioConcur'05, CMSB'05, ECOOP'05, COORD'05, PLAN-X'05, FM'05, TGC'05,ESOP'05, NETTAB'04 WS, BioConcur'04 WS, Express'04 WS, TCS'04, CMSB'04, ECOOP'04, EDBT'04, ASIAN'03, OOPSLA'03, BioConcur'03 WS, CSMB'03, ECOOP'03 (Chair), Web Dynamics WS'02, TCS'02, MA'01, PDCIWNMC WS'01 (in IPDPS'01), PODS'01, SAINT'01, FOOL'01, FOSSACS'01, CONCUR'00, TCS'00, ECOOP'00, DBPL WS'99, ASAP'99, WESTAPP WS'99, FOOL'99 (Chair), ESOP'99, PLILP/ALP'98, HLCL'98, ECOOP'98, ESOP'98, POPL'98 (Chair), DSL'97, ECOOP'97, Types in Compilation WS '97, Domain Specific Languages WS '97, Nomadic Computing WS '97, ICDE'97, FASE'97, COORD'97, FOOL'97, Agents WS ECOOP'96, ICFP'96, COORD'96, OOPSLA'95, COOTS'95, MFPS'95, POPL'94, FPCA'91, OOPSLA'91, ECOOP'91, ECOOP-OOPLSA'90, POPL'90, L&FP'88, LICS'87, FPCA'87.

Working Groups

- Founding Member, IFIP WG2.8 (Functional Programming), 1988..2000.
- Member, IFIP WG2.2 (Formal Description of Programming Concepts), 1986..1995.

Patents

- US patent 6,826,751 B1 granted 2004-11-30.
- US patent 7,721,335 granted 2010-05-18.