## Lorenzo Carlucci - born 04.20.1976


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### Degrees

Ph.D. in Computer Science
August 2006
Dept. of Computer and Information Sciences
University of Delaware, Newark, DE, U.S.A.
Title: *Some Cognitively-Motivated Learning Paradigms in Algorithmic Learning Theory*
Advisor: Prof. John Case

Dottorato di Ricerca (≅ Ph.D.) in Mathematics
February 2006
Dept. of Mathematics
University of Siena, Siena, Italy
Title: *Some results on unprovable theorems*
Advisor: Prof. Franco Montagna
External Referees: Prof. Lev Beklemishev, Prof. Herman R. Jervell
Distinction: Excellent

Diplome in Philosophical Disciplines, *Summa Cum Laude*
January 2000
Scuola Normale Superiore di Pisa, Pisa, Italy
Title: *Ennio De Giorgi's theories for the Foundations of Mathematics*
Advisors: Prof. Ettore Casari, Prof. Marco Forti (Dept. of Mathematics)

Laurea (≅ M.A.+B.A.) in Philosophy, *Summa Cum Laude*
September 1999
Dept. of Philosophy
University of Pisa, Pisa, Italy
Title: *Independence proofs of Kirby-Paris' Hydra Theorem from Peano Arithmetic*
Advisors: Prof. Marco Forti (Dept. of Mathematics), Prof. Enrico Moriconi

### Current Position

Assegnista di Ricerca (Research Associate) 2007–2009
Università di Roma 'La Sapienza', Dept. of Computer Sciences
Roma, Italy
Scientific Director: Prof. Rossella Petreschi.

Research Fellow 2007–2009
Scuola Normale Superiore di Pisa, Dept. of Humanities
Pisa, Italy
Scientific Director: Prof. Massimo Mugnai.

**Previous Positions**

Teaching Assistant, Research Assistant — 2005–2006
University of Delaware, Dept. of Computer and Info. Sciences
Newark, DE, U.S.A.
Research Director: Prof. John Case.

Research Assistant — 2003–2004
University of Delaware, Dept. of Computer and Info. Sciences
Newark, DE, U.S.A.
Research Director: Prof. John Case.

Funded Ph.D. Student — 2002–2006
University of Siena, Dept. of Mathematics
Siena, Italy
Research Director: Prof. Franco Montagna.

Funded Ph.D. Student — 2001–2002
Scuola Normale Superiore di Pisa, Classe di Lettere
Pisa, Italy
(Resigned Position).

Funded Undergraduate Fellow — 1994–1999
Scuola Normale Superiore di Pisa, Classe di Lettere
Pisa, Italy
Undergraduate studies in Philosophy (spec. Logic)

**Teaching**

Teaching Assistant — Spring 2008
Università di Roma 'La Sapienza', Dept. of Computer Sciences
Roma, Italy
*Programmazione II.*

Instructor — a.y. 2008
Scuola Normale Superiore di Pisa
Pisa, Italy
*An Introduction to Set Theory.*

Head Teaching Assistant and Lab Instructor — Spring 2006
University of Delaware
Newark, DE, U.S.A.
*Introduction to Computer Science* (CISC 181, Undergraduate).

Head Teaching Assistant — Fall 2005
University of Delaware
Newark, DE, U.S.A.
*Bioinformatics* (CISC 667, Graduate).

Head Teaching Assistant — Fall 2005
University of Delaware
Newark, DE, U.S.A.
*Data Structures* (CISC 220, Undergraduate).

Guest Lecturer — Spring 2004
University of Delaware
Newark, DE, U.S.A.
*Theory of Machine Learning* (CISC 805, Ph.D.).

**Journal Articles**

1. L. Carlucci, *A new proof-theoretic proof of the independence of Kirby-Paris' Hydra Theorem*, **Theoretical Computer Science**, 300, (2003), 365–378.
2. L. Carlucci, *Worms, Gaps and Hydras*, **Mathematical Logic Quarterly**, 51:4, (2005), 342–350.
3. L. Carlucci, S. Jain, E. Kinber and F. Stephan, *Variations on U-shaped learning*, **Information and Computation**, 204:8, (2006), 1264–1294.
4. L. Carlucci, J. Case, S. Jain and F. Stephan, *Results on memory-limited U-shaped learning*, **Information and Computation**, 205:10, (2007), 1551–1573.
5. L. Carlucci, J. Case, S. Jain and F. Stephan, *Non-U-shaped vacillatory and team learning*, in **Journal of Computer and System Sciences**, 74:4, (2008), 409–430.
6. L. Carlucci, J. Case and S. Jain, *Learning Correction Grammars*, accepted for publication in the **Journal of Symbolic Logic**.

**Refereed Conference Articles**

1. L. Carlucci, J. Case, S. Jain and F. Stephan, *Non U-shaped vacillatory and team learning*, Proceedings of the Annual Conference on Algorithmic Learning Theory, ALT 2005, *Lecture Notes in Artificial Intelligence*, n. 3734, 241–255, Springer.
2. L. Carlucci, S. Jain, E. Kinber and F. Stephan, *Variations on U-shaped learning*, in P. Auer, R. Meir (eds.), Learning Theory, Proceedings of the 18th Annual Conference on Computational Learning Theory, *Lecture Notes in Computer Science*, n. 3559, 382–397, Springer.
3. L. Carlucci, J. Case, S. Jain and F. Stephan, *Memory-Limited U-Shaped Learning*, in J. G. Carbonell, J. Siekmann (eds.), Learning Theory, Proceedings of the 19th Annual Conference on Learning Theory, COLT 2006, *Lecture Notes in Computer Science*, n. 4005, 244–258, Springer.
4. L. Carlucci, J. Case and S. Jain, *Learning Correction Grammars*, in N. H. Bshouty and C. Gentile (eds.), Proceedings of the 20th Annual Conference on Computational Learning Theory, COLT 2007, *Lecture Notes in Computer Science*, n. 4539, 203–217, Springer.

**Submitted Papers**

1. L. Carlucci, G. Lee and A. Weiermann, *Classifying the phase transition threshold for regressive Ramsey numbers*, submitted to the **American Journal of Mathematics**.
2. L. Carlucci, P. Dehornoy and A. Weiermann, *Independence results involving braids*, submitted to **Proceedings of the London Mathematical Society**.
3. L. Carlucci, *Long Games on Braids*, submitted to **Annals of Pure and Applied Logic**.

**Working Papers**

1. L. Carlucci, A. Weiermann, *Phase transition for Friedman-Ramsey theorems.*
2. L. Carlucci, A. Weiermann, *Phase transition for Erdös-Rado Theorem.*
3. L. Carlucci, *Ordinal mind-change complexity of learnability of Robson ideals.*
4. L. Carlucci, J. Case, *U-Shaped Learning: a recursion-theoretic perspective.*

**Conference Participation**

- June 2007 - Contributed paper at COLT 2007. Title: *Learning Correction Grammars* (joint with J. Case and S. Jain).
- June 2006 - Contributed paper at COLT 2006. Title: *Memory-Limited U-shaped Learning* (joint with J. Case, S. Jain and F. Stephan).
- October 2005 - Contributed paper at ALT 2005. Title: *Non U-shaped Vacillatory and Team Learning* (joint with J. Case, S. Jain and F. Stephan).
- June 2005 - Contributed paper at COLT 2005. Title: *Variations on U-shaped learning* (joint with S. Jain, E. Kinber and F. Stephan).
- August 2004 - Poster at SMP 2004 (37th Annual Meeting of the Society for Mathematical Psychology). Title: *U-shaped learning may be necessary* (abstract in Journal of Mathematical Psychology vol. 49, 2005).
- August 2002 - Poster at Logic Colloquium 2002, Münster. Title: *Provably total functions and the Hydra Game.*

**Invited Talks**

- November 2007 - *Unprovability after Gödel*, invited talk at the Department of Computer Science, University of Rome, Rome, Italy.
- April 2007 - *Unprovability and unlearnability results*, invited talk at the Department of Computer Science, University of Liverpool, Liverpool, UK.
- December 2007 - *Independence results for first order Peano Arithmetic and its subsystems*, invited talk at the Department of Pure Mathematics and Computer Algebra, University of Ghent, Ghent, Belgium.
- April 2006 - *Phase transitions for old and new independence results*, invited presentation for the Gödel Centenary: Young Scholars' Competition, University of Vienna, Vienna, Austria.
- November 2004 - *Ordinals and Independence Results in Learning Theory*, invited talk, Dept. of Mathematics, University of Utrecht, Utrecht, The Netherlands.

– November 2004 - *U-shaped learning may be necessary*, invited talk, Dept. of Philosophy, University of Utrecht, Utrecht, The Netherlands.

– March 2004 - *On the necessity of U-shaped learning*, invited talk, SIG-Theory Seminar, Dept. of Computer and Information Sciences, University of Delaware, Newark DE, U.S.A.

– October 2002 - *Introduction to Computational Learning Theory*, invited seminar, Dept. of Philosophy, University of Pisa, Italy.

– May 2001 - *Gentzen's consistency proof*, invited seminar, Dept. of Philosophy, University of Pisa, Italy.

– May 2000 - *Introduction to non-standard models of Peano Arithmetic*, invited seminar, Dept. of Philosophy, University of Pisa, Italy.

**Honors and Awards**

2006 Selected as one of the ten finalists for the prize *Kurt Gödel Centenary: Young Scholars' Competition* (Kurt Gödel Society), invited to present their work at Horizons of Truth, Vienna, April 2006.

**Other Professional Activities**

from 2008 Reviewer for **Mathematical Reviews**.

from 2008 Referee for Springer **Lecture Notes in Logic**.

2006 Co-organizer of an Oberwolfach miniworkshop (0648b) *Logic, Combinatorics and Independence Results* (26.11.06–02.12.06).

**Grants and Funding**

2008 $75.000 Research grant of the John Templeton Foundation for a two-years research project in the context of the invitation-only RFP "Exploring the Infinite, Phase I: Mathematics and Mathematical Logic" (100 invitees worldwide, of which approx. 1/5 funded).

2007-2009 Post-Doc (Assegno di Ricerca) at the Department of Computer Science, University of Rome . "La Sapienza".

2007-2008 Research fellowship at the Scuola Normale Superiore di Pisa, funded by Telecom Italia in the context of the "Progetto Italia" program.

2005–2006 Teaching Assistantship, Dept. of Computer and Info. Sciences, University of Delaware, Newark DE, U.S.A., (NSF-Grant CCR-0208616).

2003–2004 Research Assistantship, Dept. of Computer and Info. Sciences, University of Delaware, Newark DE, U.S.A., (NSF-Grant CCR-0208616).

2002–2006 Funded Ph.D. student in Mathematical Logic and Theoretical Computer Science, Dept. of Mathematics, University of Siena, Siena, Italy. (Classified first in national competition).

2000–2001 Funded Ph.D. student in Philosophy (spec. Logic), Scuola Normale Superiore di Pisa, Pisa, Italy. (Classified first in national competition). (Resigned position).

1994–1999 Funded undergraduate fellow of the Scuola Normale Superiore di Pisa, Class of Philosophy. (Fellowship awarded through national competition).

Other Between 2005 and 2007 Travel grants for invited research visits to Dept. of Mathematics, University of Utrecht (The Netherlands); Dept. of Pure Mathematics and Computer Algebra, University of Ghent (Belgium); Dept. of Computer Science, University of Liverpool (UK); Dept. of Mathematics, University of Caen (France); University of Vienna (Austria).

**Skills**

- Languages: English (excellent), French (excellent), German (basic).
- Computer Skills: Knowledge of C, C++, Perl, Lisp, Unix, HTML, LaTeX.

**References**

- Prof. Lev Beklemishev, Steklov Mathematical Institute, Moscow.
- Prof. John Case, University of Delaware, Dept. of Computer and Info. Sciences.
- Prof. Franco Montagna, University of Siena, Dept. of Mathematics.
- Prof. Andreas Weiermann, University of Ghent, Dept. of Pure Mathematics and Computer Algebra.