

Franco Raimondi

Date of Birth: 14th October 1974
Marital Status: Married
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EDUCATION

- ◇ **PhD in Computer Science**, University College London, 2006.
- ◇ **MSc in Physics**, Università Statale di Milano, Italy (110/110 cum laude), 1998.

PROFESSIONAL HISTORY

- ◇ 2009-: **Senior Lecturer**, Middlesex University.
- ◇ 2006-2009: **Research Fellow**, University College London.
- ◇ 2002-2004: **Teaching Assistant**, King's College London.
- ◇ 1999-2002: **System administrator and Software Engineer**, Iris SpA, Milan - London.
- ◇ 1999: **Teacher** (Maths, Computing), Milan, Italy.
- ◇ 1998: **Military service**, Italy.

Research

- RESEARCH GRANTS AND AWARDS
- ◇ 2008. ACM distinguished paper award for the paper *Efficient online monitoring of web-service SLAs* (FSE 2008).
 - ◇ 2009. SGT at NASA Ames (Mountain View, CA, USA): grant for research activities (\$7,000): *finite and infinite automata-based model checking for linear temporal logic*.
 - ◇ 2008. RIACS at NASA Ames (Mountain View, CA, USA): grant for research activities (\$15,000): *specification based testing for planning domains using temporal logic*.
 - ◇ 2007. USS at NASA Ames (Mountain View, CA, USA): grant for research activities (\$10,000): *coverage metrics for specification based testing using temporal logic*
 - ◇ 2006. MCT at NASA Ames (Mountain View, CA, USA): grant for research activities (\$5,000): *formal verification of EUROPA planning models*.
 - ◇ 2004. MCT at NASA Ames (Mountain View, CA, USA): grant for research activities (\$8,000): *formal verification of diagnosability of hardware models*.
- RESEARCH PROJECTS
- I have worked on the following research projects:
- ◇ 2008-2009: EPSRC project UbiVal (<http://www.ubival.org>), *Fundamental Approaches to Validation of Ubiquitous Computing Applications and Infrastructures*. Department of Computer Science, University College London.
 - ◇ 2006-2008: EU project PLASTIC (<http://www.ist-plastic.org/>), *Providing lightweight and adaptable service technology*. Department of Computer Science, University College London.
 - ◇ 2004-2006: EPSRC Case project *Verification of multi-agent systems via OBDDs*. Department of Computer Science, King's College and University College London.
- INVITED TALKS
- ◇ *Formal verification of complex and critical systems*, Bedfordshire University, Luton, November 2009.
 - ◇ *Efficient Online Monitoring of Web-Service SLAs*, ISEC 2009, Pune, India, February 2009.
 - ◇ *Model checking time, knowledge, correct behaviour, and strategies*, Université catholique de Louvain, Louvain-la-Neuve, Belgium, December 2008.
- ENABLING ACTIVITIES
- ◇ Program Committee member of FASE, ProVeCS, WESOA, MoChArt and SEAA.
 - ◇ I have reviewed academic books for John Wiley & Sons.
 - ◇ I have reviewed papers for the following journals: IEEE Transactions on Software Engineering, ACM Transactions on Software Engineering and Methodology, JAAMAS, IEEE Transactions on Mobile Computing, Artificial Intelligence, Fundamenta Informaticae, Journal of Systems and Software.
 - ◇ I have reviewed papers for the following conferences: AAMAS, DEON, CAV, IFM 2007, ESEC/FSE, ASE 2007, and for various workshops.
 - ◇ Organiser for the Software and System Engineering seminars series at UCL.

Publications

- JOURNAL PAPERS
- ◇ M. Sama, F. Raimondi, S. Elbaum, D. Rosenblum, Z. Wang, *Context-Aware Adaptive Applications: Fault Patterns and Their Automated Identification*, to appear in IEEE Transactions on Software Engineering, 2010.
 - ◇ J. Skene, F. Raimondi, W. Emmerich, *Service-Level Agreements for Electronic Services*, IEEE Transactions on Software Engineering, 2009.
 - ◇ A. Lomuscio, F. Raimondi and B. Wozna, *Verification of the TESLA protocol with MCMAS-X*. Fundamenta Informaticae 79 (3-4): 473-486.
 - ◇ M. Kacprzak, A. Lomuscio, A. Niewiadomski, W. Penczek, F. Raimondi and M. Szreter, *Comparing BDD and SAT based techniques for model checking Chaum's Dining Cryptographers Protocol*, Fundamenta Informaticae, 72(1-3): 215-234 (2006).
 - ◇ F. Raimondi, A. Lomuscio, *Automatic verification of multi-agent systems by model checking via OBDD's*, in Journal of Applied Logic, 2005.
- PEER-REVIEWED CONFERENCES
- ◇ F. Raimondi, C. Pecheur, G. Brat, *PDVer, a tool to verify PDDL planning domains*. In proceedings of VVPS 2009.
 - ◇ J. Cubo, M. Sama, F. Raimondi, D. Rosenblum, *A Model to Design and Verify Context-Aware Adaptive Service Composition*. In IEEE proceedings of SCC 2009.
 - ◇ A. Bettinelli, L. Liberti, F. Raimondi, D. Savourey, *The Anonymous Subgraph Problem*. In Proceedings of CTW 2009.
 - ◇ F. Roda, L. Liberti, F. Raimondi, *Combinatorial optimization based recommender systems*. In Proceedings of CTW 2009.
 - ◇ A. Lomuscio, H. Qu, F. Raimondi, *MCMAS: A Model Checker for the verification of Multi-Agent Systems*. To appear in Proceedings of CAV 2009.
 - ◇ C. Pecheur, F. Raimondi, G. Brat, *A Formal Analysis of Requirements-Based Testing*. To appear in Proceedings of ISSA 2009.
 - ◇ M. Sama, F. Raimondi, D. Rosenblum, W. Emmerich, *Algorithms for efficient symbolic detection of faults in context-aware applications*. In IEEE DL proceedings of the ARAMIS 2008, L'Aquila, Italy, 2008.
 - ◇ F. Raimondi, J. Skene, W. Emmerich, *Efficient online monitoring of web-service SLAs*. In Proceedings of ACM SIGSOFT/FSE 2008, Atlanta, USA, 2008
 - ◇ L. Liberti, F. Raimondi, *The Secret Santa Problem*. In LNCS proceedings of AAIM 2008, Shanghai, China, June 2008.
 - ◇ R. Calegari, M. Musolesi, F. Raimondi, C. Mascolo, *CTG: a Connectivity Trace Generator for testing the performance of opportunistic mobile systems*. Proceedings of ESEC/FSE 2007, Dubrovnik, Croatia, September 2007.
 - ◇ F. Raimondi, J. Skene, W. Emmerich, B. Wozna, *A Methodology for online monitoring non-functional specification of web-services*. Proceedings of PROVECS 2007 - TOOLS 2007, Zurich, June 2007
 - ◇ F. Raimondi, C. Pecheur, G. Brat, *Testing Planning Domains (without Model Checkers)*, ENTCS proceedings of MBT (Model Based Testing), colocated with ETAPS 2007, Braga, Portugal, March 2007
 - ◇ A. Lomuscio, C. Pecheur and F. Raimondi, *Verification of knowledge and time with NuSMV*, Proceedings of IJCAI07 (International Conference on Artificial Intelligence), Hyderabad, India, January 2007.
 - ◇ A. Lomuscio, F. Raimondi and B. Wozna, *Verification of the TESLA protocol with MCMAS-X*, in Proceedings of CS&P, International Workshop on Concurrency, Specification and Programming. Wandlitz, Germany, September 2006.

- ◇ C. Pecheur and F. Raimondi, *Symbolic model checking of logics with Actions*, in Proceedings of the Fourth Workshop on model checking artificial intelligence (MoChArt 2006), Springer Verlag LNAI.
 - ◇ F. Raimondi, A.Lomuscio *Model checking knowledge, strategies, and games in multi-agent systems*, in Proceedings of AAMAS06, the Fifth International Joint Conference on Autonomous Agents and Multi-Agent Systems (ACM Press). May 2006, Hakodate, Japan.
 - ◇ F. Raimondi, A.Lomuscio *The complexity of model checking concurrent programs against CTLK specifications* (short paper), in Proceedings of the AAMAS06, Fifth International Joint Conference on Autonomous Agents and Multi-Agent Systems (ACM Press). May 2006, Hakodate, Japan.
 - ◇ A. Lomuscio, F. Raimondi, *MCMAS: a tool for verifying multi-agent systems*, in Proceedings of TACAS 2006, 12th international conference on tools and algorithms for the construction and analysis of systems (Springer Verlag). March 2006, Vienna.
 - ◇ F. Raimondi, A. Lomuscio, *The complexity of symbolic model checking temporal-epistemic logics*, in Proceedings of the Workshop on Concurrency, Specification and Programming (CS&P), September 2005, Poland.
 - ◇ F. Raimondi, C. Pecheur, A. Lomuscio, *Applications of model checking for multi-agent systems: verification of diagnosability and recoverability*, in Proceedings of the Workshop on Concurrency, Specification and Programming (CS&P), September 2005, Poland.
 - ◇ F. Raimondi, A. Lomuscio. *Automatic verification of deontic interpreted systems by model checking via OBDD's*, Proceedings of ECAI04, Sixteenth European Conference on Artificial Intelligence. Valencia, August 2004.
 - ◇ F. Raimondi, A. Lomuscio. *Symbolic model checking of multi-agent systems via OBDDs: an algorithm and its implementation*, Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent systems. (AAMAS04). New York, August 2004.
 - ◇ F. Raimondi, A. Lomuscio. *Symbolic Model Checking of Deontic Interpreted Systems via OBDD's*, Proceedings of DEON04, Seventh International Workshop on Deontic Logic in Computer Science. Springer Verlag LNCS 3065. Madeira, May 2004.
 - ◇ F. Raimondi, *Model Checking Epistemic Properties of Interpreted Systems*, Proceedings of ESSLLI 03, Vienna, Austria.
 - ◇ A.Lomuscio, F.Raimondi and M.Sergot, *Towards model checking interpreted systems*, (poster) AAMAS 03, Melbourne, Australia.
 - ◇ F. Raimondi, A.Lomuscio, *A Tool For Specification And Verification Of Epistemic Properties In Interpreted Systems*, in Electronic Lecture Notes of Theoretical Computer Science, Vol. 85 (2).
 - ◇ A.Lomuscio, F. Raimondi and M.Sergot, *Towards model checking interpreted systems*, Proceedings of MoChArt 2002, Lyon, France.
- THESES
- ◇ F. Raimondi, *Model Checking Multi-Agent Systems*, PhD thesis, University College London, 2006.
 - ◇ F. Raimondi, *Modelling the physical and chemical evolution of pollutants in the lower atmosphere*, MSc thesis, Università di Milano, Italy, 1998.

Teaching

Year	Subject	Hours	Students
2009/2010	Information Security Management	30	5
	Validation and Verification (lectures)	16	25
	Functional programming (Haskell)	16	25
2008/2009	Validation and Verification (lectures)	6	32
	Compilers (exercise classes)	10	60
2007/2008	Validation and Verification (lectures)	8	30
	Compilers (exercise classes)	10	40
2006/2007	Validation and Verification (lectures)	8	24
2005/2006	Validation and Verification (lectures and exercise classes)	6	20
2003/2004	Agent Communication Languages (lectures and exercise classes)	12	20
	Database Theories (exercise classes)	12	20
	Artificial Intelligence (exercise classes)	15	60
	Distributed Systems (lectures and exercise classes)	15	120
	Foundations of Computing (exercise classes)	15	120
2002/2003	Agent Communication Languages (lectures and exercise classes)	12	20
	Data Structures (exercise classes)	12	60
	Distributed Systems (lectures and exercise classes)	15	120
	Foundations of Computing (exercise classes)	15	120

Statement of research and teaching interests

My research focuses on the application of logic-based methods to the formal verification of complex and critical systems, in particular on the development of new techniques for extending the applicability of formal verification to new domains such as communication protocols for anonymity and privacy, diagnosability, planning, and service level agreements. My research interests are not limited to theory: besides papers on complexity results, many of my results have been implemented in tools publicly available.

Through my undergraduate studies in Italy and my postgraduate work in London I have achieved a sound background in Physics, Mathematics (particularly in logic), and an in-depth experience with the development of software through my work experience and research collaborations. In my postgraduate and postdoctoral research I have applied this training to the development of verification techniques and tools for various systems. Indeed, in parallel with my research activities in London, I spent several months in 2004, 2006, 2007, 2008 and 2009 in the Intelligent Systems Division at NASA Ames Research Center in the United States to apply the results of my work to the verification of various scenarios for space exploration. I have also collaborated extensively with industrial partners such as BT during my PhD work, Telefonica, IBM, and Siemens during my post-doctoral research.

I have published extensively in AI conferences and journals, formal methods journals and conferences, and software engineering conferences. I have served as a reviewer for a number of international journals covering my area of expertise. I have a good experience in writing and submitting project proposals: I have produced a number of parts in EPSRC and European project proposal for my supervisors. In 2007 I was shortlisted for the EPSRC post-doctoral fellowships in Mathematical sciences, theoretical Physics, and theoretical Computer Science.

From my theoretical background I know what logic-based techniques can offer, and I believe that my experiences with real scenarios made me understand what is currently required to make formal verification a key step in the development of critical and complex systems and protocols. I believe that the current trend in the development of increasingly complex systems (thanks to hardware miniaturization and to the advances in software development) will make formal verification a fundamental step in most projects. My goal is to lead a team to provide the building blocks for this.

Teaching has always played a central role in my curriculum. My first job as an undergraduate student in 1997 involved teaching basic computing and Maths skills to a group of adult workers in the process of being re-allocated to other positions (the job was funded by the European Union). Since then, all my job positions have involved some form of teaching.

Most notably, I have been a teaching assistant at King's College London from 2002 to 2004 to fund my research as a part-time PhD student. There, I have run lectures, labs and exercise classes from first year to Master subjects, in front of classes ranging from less than 10 students to an auditorium of 160 students. As part of my duties, while at King's College I also attended courses from the PGCAP program and I had three teaching observations.

At UCL, I have been involved in the course "Validation and Verification" from 2005 and I have been responsible for the "Temporal Logic" part of it. For this course I have prepared lectures, course-works, and exam questions; I have also marked exams for my part of the course. In 2006, I have attended the "UG and MScCS project supervisor training workshop" required to acquire "examiner status", and I have presented my work at various UCAS open days.

At Middlesex University, I am module leader for the course "Information Security Management" and I am currently studying for the Postgraduate Certificate in Higher Education (PGCHE).

I do not consider teaching duties as a burden and I am typically proactive when teaching activities need to be covered. The evaluation of my teaching activities is consistently very positive, both from my peers and from the students. I particularly enjoy teaching "theoretical" subjects, such as logic and Mathematics. My lecturing style interleaves the

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introduction of new concepts with direct questions to the students, all mixed with humour and practical examples whenever this is possible.

REFERENCES

- ◇ Professor Wolfgang Emmerich - Post-doctoral Supervisor. Department of Computer Science, University College London, London WC1E 6BT United Kingdom. Tel: +44 20 7679 4413. Email: `W.Emmerich@cs.ucl.ac.uk`.

- ◇ Dr. Alessio Lomuscio - PhD Supervisor. Department of Computing Imperial College London. 180 Queen's Gate, London SW7 2AZ. Tel: +44 (20) 7594 8414. Email: `A.Lomuscio@imperial.ac.uk`.

- ◇ Dr. Guillaume Brat - Supervisor during NASA internships. NASA Ames Research Center, M/S 269-2, Moffett Field, CA 94035-1000 USA. Tel: +1 (650) 604-1105. Email: `Guillaume.P.Brat@nasa.gov`.

- ◇ Professor Charles Pecheur - Supervisor during NASA internships. Dept. INGI Université catholique de Louvain, Place Sainte-Barbe 2 1348 Louvain-la-Neuve Belgium. Tel: +32 10 47 8779. Email: `Charles.Pecheur@uclouvain.be`.