Attachment 'C'

University Academic Curriculum Vitae

Personal information	Name: Sasha Rubin Dob: 16/02/76 Pob: South Africa Nationality: New Zealand Address: Via Aniello Falcone, 428, Vomero, 80127, Naples Telephone number: 344 281 0361 E-Mail: rubin@unina.it
Education since leaving school	• 1996, Bsc in mathematics,, University of Cape Town • 1999, MsC in mathematics, University of Auckland • 2004, PhD in mathematics, "Automatic Structures", University of Auckland
Present appointment	• Fellow of the ASTREA lab • Start of appointment: 03/2017 • Level: Fellow • Employer: UNINA "Federico II" • My present appointment consists of basic research in theoretical computer science and artificial intelligence, helping to supervise undergraduate and PhD students, and teaching short courses.
Professional experience	Chronological list of all previous employments (each with job title, starting and finishing dates, level, employer, responsibilities) See next page…

From / to	Job title	Name of academic Institution	Academic level	responsibilities
2004/2008	Honorary Research Fellow	U. o. Auckland	PostDoc	Research
2008/2009	Visiting Assistant Professor	Cornell U.	Assistant Professor	Teaching
2009/2010	Visiting Researcher	U. o. Auckland	Visiting Researcher	Research
2010	Visiting Lecturer	U. o. Cape Town	Visiting Lecturer	Teaching
2010/2012	Visiting Researcher	U. o. Auckland	Visiting Researcher	Research
2012/2014	PostDoc	TU Wien, IST Austria	PostDoc	Research
2014/2015	PostDoc	TU Wien, TU Graz	PostDoc	Research
2015/2017	Marie Curie Fellow	UNINA "Federico II"	PostDoc	Research

Participation in exhibitions (where applicable)

CONTRIBUTIONS: Primary co-author on all publications.

AWARDS:
- Bsc 1996 Dean's Merit List
- Msc 1998 First Class
- PhD 2004 Prize for best doctoral thesis in the Faculty of Science, and Montgomery memorial prize in logic from the Department of Philosophy

Experience in academic teaching

- **Games on graphs**, UNINA "Federico II", Theoretical Computer Science, PhD course.

- According to student evaluations: my teaching is clear, organised, I am proactively willing to help, and motivating (2010). In 2010 I briefly volunteered at a secondary school in Accra, Ghana, teaching, observing and commenting on grade 5mathematics classes. I also briefly volunteered in Khayelitsha, South Africa, helping high-school students prepare for their mathematics exams.

Other academic responsibilities	• **Program Committee member** for IRISA Master Research Internship 2016-2017.

- **Co-chair** of the Italian Conference on Theoretical Computer Science (ICTCS) 2017 , ictcs2017.unina.it, Naples, 26-29 September 2017.
- **Co-chair** of the International Workshop on Strategic reasoning (SR) 2017 (http://sr2017.csc.liv.ac.uk/), Liverpool 26-27 July 2017.
- **Co-organiser** of the Italian Conference on Com-putational Logic (CILC) 2017 (http://cilc2017.unina.it/), Naples, 26-29 September 2017.
- **PC member** of the International Joint Conference on Artificial Intelligence (IJCAI) 2017,
- **PC member** of the AAAI Conference on Artificial Intelligence (AAAI) 2017
- **PC member** of the International Workshop of Strategic Reasoning (SR) 2016
- **PC member** of the International Symposium on Games, Automata, Logics and Formal Verification (GandALF) 2016,
- **PC member** of the European Conference on Artificial Intelligence (ECAI) 2016.
- **Co-organiser** of the First Workshop on Formal Methods in AI (FMAI) 2017 (https://sites.google.com/site/fmai2017homepage/) 22-24 February 2017, Naples.

Memberships

Research and scholarships	I work in formal methods, a branch of theoretical computer science, and study the power of automata theory (broadly construed) and mathematical logic for describing, reasoning and controlling systems.

During my PhD I (and my co-authors) pioneered the development of the theory of automatic structures. My PhD thesis was awarded the Vice-chancellor's prize for the best doctoral thesis in the Faculty of Science, and Montgomery memorial prize in logic from the Department of Philosophy.

I was then awarded a prestigious New Zealand Science and Technology Postdoctoral Fellowship. During this fellowship, I published a survey and extension of the main results in my thesis in the Bulletin of Symbolic Logic, and I (with a PhD student of Erich Gr\"adel's) solved a 12 year-old conjecture of Courcelle's (STACS'08).

In the last few years, I (with my co-authors) generalised a cornerstone paper on verification of parameterised systems ("Reasoning about Rings", E.A. Emerson, K.S. Namjoshi, {\sc POPL}, 1995) from ring topologies to arbitrary topologies (VMCAI'14). We also completed a book, published by Morgan \&

Claypool in 2015, surveying decidability results in parameterised verification.

Recently, I was awarded a two year Marie-Curie fellowship from the Istituto Nazionale di Alta Matematica to work on formal methods for parameterised light-weight mobile agents. I opened this direction with an article in the premier conference on autonomous and multiagent systems (AAMAS'15). Subsequently (with my co-authors) I continued this direction and published in top rated conferences (AAMAS'16), and won a best-paper award (PRIMA'15) (invited to the premier journal on autonomous and multi-agent systems JAAMAS).

Date granted	Award Holder	Funding Body	Title	Amount received
2004	me	NZ Government	New Zealand Science and Technology Postdoctoral Fellowship, UOAX0413	3 years salary and travel expenses
2015	me	INDAM and the EC	Marie Curie fellow of the National Institute of Higher Mathematics (INdAM ``F. Severi"). INdAM-COFUND-2012, FP7-PEOPLE-2012-COFUND, Proj. ID 600198.	2 years' salary and travel expenses (Eu 43200.00 + RCC2 of Eu2000.00)
15/12/2015	me	GNSAGA	Scientific collaboration with Profs. Lomuscio (Imperial) and Wooldridge (Oxford)	Eu 1050.00
16/03/2016	me	GNSAGA	Attend KR16 and AAMAS16	Eu 1900.00

Publications

Publications 2007-2017

1. (*) Raphael Berthon, Bastien Maubert, Aniello Murano, Sasha Rubin, and Moshe Vardi. "Hierarchical Strategic Reasoning". In: *Logic in Computer Science (LICS 2017)*. 2017.

2. (*) Verification of Multi-agent Systems with Imperfect Information and Public Actions
Francesco Belardinelli, Alessio Lomuscio, Aniello Murano,

Sasha Rubin
Proceedings of the 2017 International Conference on Autonomous Agents & Multiagent Systems, São Paulo, May 8-12, 2017, 2017.

3. (*) Imperfect information games and generalized planning
Giuseppe De Giacomo, and Antonio Di Stasio, Aniello Murano, Sasha Rubin
International Joint Conference on Artificial Intelligence (IJCAI 2016),

4. Decidability in Parameterized Verification
Roderick Bloem, Swen Jacobs, Ayrat Khalimov, Igor Konnov, Sasha Rubin, Helmut Veith, Josef Widder
SIGACT News, volume 47, number 2, pages 53-64, 2016.

5. (*) Prompt Alternating-Time Epistemic Logics
Benjamin Aminof, Aniello Murano, Sasha Rubin, Florian Zuleger
Principles of Knowledge Representation and Reasoning: Proceedings of the Fifteenth International Conference, KR 2016, Cape Town, South Africa, April 25-29, 2016., pages 258-267, 2016.

6. Model Checking Parameterised Multi-token Systems via the Composition Method
Benjamin Aminof, Sasha Rubin
Automated Reasoning - 8th International Joint Conference, IJCAR 2016, Coimbra, Portugal, June 27 - July 2, 2016, Proceedings, pages 499-515, 2016.

7. (*) Automatic Verification of Multi-Agent Systems in Parameterised Grid-Environments
Benjamin Aminof, Aniello Murano, Sasha Rubin, Florian Zuleger
Proceedings of the 2016 International Conference on Autonomous Agents & Multiagent Systems, Singapore, May 9-13, 2016, pages 1190-1199, 2016.

8. (*) Graded Strategy Logic: Reasoning about Uniqueness of Nash Equilibria
Benjamin Aminof, Vadim Malvone, Aniello Murano, Sasha Rubin
Proceedings of the 2016 International Conference on Autonomous Agents & Multiagent Systems, Singapore, May 9-13, 2016, pages 698-706, 2016.

9. (*) First Cycle Games
Benjamin Aminof, Sasha Rubin
Information and Computation,, 2016.

10. Graded Strategy Logic
Benjamin Aminof, Vadim Malvone, Aniello Murano, Sasha Rubin
Proceedings 4th International Workshop on Strategic

Reasoning, SR 2016, New York, USA., 2016.

11. (*) Decidability of Parameterized Verification
    Roderick Bloem, Swen Jacobs, Ayrat Khalimov, Igor Konnov,
    Sasha Rubin, Helmut Veith, Josef Widder
    2015, Morgan & Claypool Publishers.

12. (*) Verification of Asynchronous Mobile-Robots in Partially-
    Known Environments
    Benjamin Aminof, Aniello Murano, Sasha Rubin, Florian
    Zuleger
    *PRIMA 2015: Principles and Practice of Multi-Agent
    Systems - 18th International Conference, Bertinoro, Italy,
    October 26-30, 2015, Proceedings*, pages 185-200, 2015
    [Best-Paper Award]

13. Multi-agent Path Planning in Known Dynamic Environments
    Aniello Murano, Giuseppe Perelli, Sasha Rubin
    *PRIMA 2015: Principles and Practice of Multi-Agent
    Systems - 18th International Conference, Bertinoro, Italy,
    October 26-30, 2015, Proceedings*, pages 218-231, 2015.

14. On the Expressive Power of Communication Primitives in
    Parameterised Systems
    Benjamin Aminof, Sasha Rubin, Florian Zuleger
    *Logic for Programming, Artificial Intelligence, and
    Reasoning - 20th International Conference, LPAR-20 2015,
    Suva, Fiji, November 24-28, 2015, Proceedings*, pages 313-
    328, 2015.

15. On CTL* with Graded Path Modalities
    Benjamin Aminof, Aniello Murano, Sasha Rubin
    *Logic for Programming, Artificial Intelligence, and
    Reasoning - 20th International Conference, LPAR-20 2015,
    Suva, Fiji, November 24-28, 2015, Proceedings*, pages 281-
    296, 2015.

16. (*) Liveness of Parameterized Timed Networks
    Benjamin Aminof, Sasha Rubin, Francesco Spegni, Florian
    Zuleger
    *Automata, Languages, and Programming - 42nd
    International Colloquium, ICALP 2015, Kyoto, Japan, July 6-
    10, 2015, Proceedings, Part II*, pages 375-387, 2015.

17. (*) Parameterised Verification of Autonomous Mobile-
    Agents in Static but Unknown Environments
    Sasha Rubin
    *Proceedings of the 2015 International Conference on
    Autonomous Agents and Multiagent Systems, AAMAS
    2015, Istanbul, Turkey, May 4-8, 2015*, pages 199-208,
    2015.

18. Alternating traps in Muller and parity games
    Andrey Grinshpun, Pakawat Phalitnonkiat, Sasha Rubin,
    Andrei Tarfulea

Theor. Comput. Sci., volume 521, pages 73-91, 2014.

19. First Cycle Games
    Benjamin Aminof, Sasha Rubin
    Proceedings 2nd International Workshop on Strategic Reasoning, SR 2014, Grenoble, France, April 5-6, 2014., pages 83-90, 2014.

20. (*) Parameterized Model Checking of Token-Passing Systems
    Benjamin Aminof, Swen Jacobs, Ayrat Khalimov, Sasha Rubin
    Verification, Model Checking, and Abstract Interpretation - 15th International Conference, VMCAI 2014, San Diego, CA, USA, January 19-21, 2014, Proceedings, pages 262-281, 2014.

21. (*) Parameterized Model Checking of Rendezvous Systems
    Benjamin Aminof, Tomer Kotek, Sasha Rubin, Francesco Spegni, Helmut Veith
    CONCUR 2014 - Concurrency Theory - 25th International Conference, CONCUR 2014, Rome, Italy, September 2-5, 2014. Proceedings, pages 109-124, 2014.
     2013

22. How to Travel between Languages
    Krishnendu Chatterjee, Siddhesh Chaubal, Sasha Rubin
    Language and Automata Theory and Applications - 7th International Conference, LATA 2013, Bilbao, Spain, April 2-5, 2013. Proceedings, pages 214-225, 2013.

23. A Myhill-Nerode theorem for automata with advice
    Alex Kruckman, Sasha Rubin, John Sheridan, Ben Zax
    Proceedings Third International Symposium on Games, Automata, Logics and Formal Verification, GandALF 2012, Napoli, Italy, September 6-8, 2012., pages 238-246, 2012.

24. (*) Interpretations in Trees with Countably Many Branches
    Alexander Rabinovich, Sasha Rubin
    LICS 2012, Proceedings of the 27th Annual IEEE Symposium on Logic in Computer Science, Dubrovnik, Croatia, June 25-28, 2012, pages 551-560, 2012.

25. (*) Automata-based presentations of infinite structures
    Vince Bárány, Erich Grädel, Sasha Rubin
    Chapter in *Finite and Algorithmic Model Theory* (Javier Esparza, Christian Michaux, Charles Steinhorn, eds.), pages 1-76, 2011, Cambridge University Press.
    Note: Cambridge Books Online

26. (*) Automata Presenting Structures: A Survey of the Finite String Case
    Sasha Rubin
    Bulletin of Symbolic Logic, volume 14, number 2, pages 169-209, 2008.

27. (*) Cardinality and counting quantifiers on omega-automatic structures
Lukasz Kaiser, Sasha Rubin, Vince Bárány
STACS 2008, 25th Annual Symposium on Theoretical Aspects of Computer Science, Bordeaux, France, February 21-23, 2008, Proceedings, pages 385-396, 2008.

28. (*) Order-Invariant MSO is Stronger than Counting MSO in the Finite
Tobias Ganzow, Sasha Rubin
STACS 2008, 25th Annual Symposium on Theoretical Aspects of Computer Science, Bordeaux, France, February 21-23, 2008, Proceedings, pages 313-324, 2008.

29. (*) Automatic Structures: Richness and Limitations
Bakhadyr Khoussainov, André Nies, Sasha Rubin, Frank Stephan
Logical Methods in Computer Science, volume 3, number 2, 2007.

Publications about the applicant

Further data   INVITED:
  • Verification of Multi-Agent Systems with Imperfect Information and Public Actions, FMAI 2017, Naples, Italy
  • Removing Partial Observability from Generalized Planning Problems, July 2017, Bozen, Italy (Hosts: Montali, Calvanese)

SELECTED:
  • IJCAI 16: Imperfect information games and generalized planning
  • AAMAS 16: Automatic Verification of Multi-Agent Systems in Parameterised Grid-Environments
  • KR 16: Prompt Alternating-Time Epistemic Logics
  • PRIMA 15: Verification of Asynchronous Mobile-Robots in Partially-Known Environments
  • PRIMA 15: Multi-agent Path Planning in Known Dynamic Environments
  • AAMAS 15: Parameterised Verification of Autonomous Mobile-Agents in Static but Unknown Environments
  • SR 14: First Cycle Games
  • VMCAI 14: Parameterized Model Checking of Token-Passing Systems

Statement of interest   Intelligent techniques for data and process management include identifying expressive yet tractable **languages** in which to express control, data, **interaction**, and **limited visibility** of processes, as well as techniques for **verification, monitoring** and **mining** of these processes. My background is suited to

making foundational contributions to this area for four reasons.

First: I have deep and extensive knowledge in automata theory which I can draw upon to formalise and study appropriate **languages** for process management (see, my work on automatic structures between 2002 and 2007).

Second: I have worked in verification of infinite state systems (BPM systems are typically infinite-state because there is no a-priori bound on the variable domains); see my work since 2014 on parameterised model-checking ([4,6,7,11,12, 17,20,21] above).

Third: I have recently worked on strategic reasoning in artificial intelligence [1,2,3,5,8,9,10]; this will allow me to contribute to a deep study of the **interaction** of processes. Concretely, processes may be the result of multiple "players" that may have conflicting goals (e.g., multiple companies want the dominant share of a market); to make sense of such processes one would need to use strategic notions from game-theory (such as equilibria), which, in turn, need to be formalised so that they can be automatically reasoned about for verification, monitoring and mining.

Fourth: I have recently acquired expertise in modeling and reasoning about imperfect and incomplete information [1,2,3,5]. This will allow me to contribute to processes with **limited visibility**.

Language competence

English: C2
Italian: A2-B1
German: A1
Portuguese: A1

(these are approximate grades; no certificates were obtained)

Date   13 April 2017   Signature