

TC1 “Foundations of Computer Science” Activity Report

Luís Soares Barbosa, TC1 chair

1 Introduction

Established as Special Group (SG14) in 1989 and approved as a Technical Committee in 1996, TC1 aims at supporting the development of Theoretical Computer Science as a fundamental science, and its engineering, as well as the design of bridges with other sciences and their applications.

This annual activity report, covering essentially the period from 1 July 2018 – 1 July 2019, will be presented to the IFIP General Assembly, to be held in Kiev, Ukraine, from 10 to 13 October 2019.

2 Organisation of TC1 and Membership

A number of changes in both the coordination and membership structure of TC1 occurred in this period:

- *Luís Soares Barbosa* (www.di.uminho.pt/~lsb/), former representative of Portugal and a member of WG 1.03, was elected Chair in January, 24.
- Under his proposal, in the 2019 business meeting, held in Paris on the 14th June 2019, *Jacques Sakarovitch*, the former TC1 Chair, was appointed, by an unanimous vote, as Vice-Chair specially in charge of the membership process within TC1.
- In June 2019, *Thomas Studer*, from the University of Bern, was nominated as the Swiss national representative, following the resignation of *Gehard Jäger*.
- *Joaquim Gabarró*, former representative of Spain, resigned as Spain left IFIP.

An up-to-date member list is available from the TC1 web page at ifip-tc1.org. Nominations of representatives for other member societies, as well as membership renovation in general, are currently under process. As this is a time-consuming process that needs to be handled in an informed and smooth way, it was decided to appoint a Vice-Chair specially in charge of these issues.

TC1 maintains a web page at ifip-tc1.org, and meets regularly twice a year, alternating a presential meeting, typically co-located with a major Computer Science event, and a virtual one conducted in an asynchronous way, and complemented, if necessary, by a short video conference. The last Business Meeting took place at Télécom ParisTech, Paris during the morning of 14th June 2019.

3 Working Group administration and dynamics

The scientific activity of TC1 takes place in its Working Groups. All of them have either their own flagship conferences (WG 1.02, 1.03, 1.05) or they are deeply involved in the organisation of conferences

with which they collocate their own workshops and business meetings (WG 1.03, 1.06, 1.07, 1.08, 1.09, 1.10).

The WG activity reports, collected in appendix to this document, and their web pages, give a good account of both their internal dynamics, and the scientific subjects that their communities are currently tackling.

The period covered by this report witnessed the re-establishment of WG 1.10 (*String Algorithmics & Applications*). *Jan Holub*, from Czech Technical University in Prague, was elected its Chair for a three years mandate. The re-established WG has 21 members, a new website at

<http://www.stringology.org/ifip/>

and a mailing list. A first meeting will be held in the Summer of 2019.

The following changes in the WG coordination took place:

- In February 2019, *Pedro P. Balbi de Oliveira*, from Universidade Presbiteriana Mackenzie, was re-elected for a second term as Chair of WG 1.05.
- In June 2019, *Sebastian Alexander Mödersheim*, from Technical University of Denmark, was elected Chair of WG 1.07, replacing *Riccardo Focardi*.

The list of Working Groups of TC1, with their chairs, vice-chairs and secretaries as of 1 July 2019, is thus established as follows.

WG		Chair	Secretary
1.02	Descriptive Complexity	Martin Kutrib Rogério Reis	Andreas Malcher
1.03	Foundations of System Specification	Lutz Schröder Markus Roggenbach	
1.05	Cellular Automata and Discrete Complex Systems	Pedro Balbi de Oliveira, Nazim Fates	Katsunobu Imai
1.06	Rewriting	Georg Moser	Martin Avanzini
1.07	Theoretical Foundations of Security Analysis and Design	Sebastian Mödersheim Véronique Cortier	Luca Viganò
1.08	Concurrency Theory	Ilaria Castellani Mohammad Reza Mousavi	
1.09	Verified Software	Jean-Christophe Filliâtre Jim Woodcock	Natarajan Shankar
1.10	String Algorithmics & Applications	Jan Holub	

The up-to-date member lists for each WG are available the corresponding web pages (accessible from the TC1 web page at ifip-tc1.org). IFIP web page: www.ifip.org/bulletin/bulltcs/memtc01.htm gives the member list for every Working Group as well.

Appendix A

Reports from the Working Groups

WG 1.02 – Descriptive Complexity

Chair: Prof. Martin Kutrib, Universität Giessen, Germany

Vice-Chair: Prof. Rogério Reis, Universidade do Porto, Portugal

Secretary: Dr. Andreas Malcher, Universität Giessen, Germany

Home page: www.informatik.uni-giessen.de/ifipwg1.2

2018-19 BRIEF ACTIVITY REPORT

Descriptive complexity has historically been a multidisciplinary area of study, with contributions from automata theory, computational complexity, cryptography, information theory, probability, statistics, pattern recognition, machine learning, computational learning theory, computer vision, neural networks, formal languages and other fields. The aims of the working group are therefore to promote research in all aspects of descriptive complexity through conferences, publications, and more informal means of scientific interaction such as electronic news groups. Since 2002 particular emphasis was and is being placed on the descriptive complexity of bio-inspired computing models and the relationship between descriptive complexity and software reliability.

The scope of the working group encompasses all aspects of descriptive complexity, both theory and application. These aspects include but are not limited to

- descriptive complexity of formal systems and structures,
- various measures of descriptive complexity of automata, grammars, languages and of related systems,
- trade-offs between descriptive complexity and mode of operation,
- circuit complexity of Boolean functions and related measures,
- succinctness of description of (finite) objects,
- descriptive complexity in resource bounded or structure bounded environments,
- structural complexity,
- descriptive complexity of formal systems for applications (for example, software reliability, software and hardware testing, modeling of natural languages),
- descriptive complexity aspects of nature motivated (bio-inspired) architectures and unconventional models of computing.

Furthermore, the WG tries to promote interaction and the exchange of information across traditional discipline boundaries and to provide a point of contact for all researchers in all disciplines interested in descriptive complexity and its applications.

Organisation of WG and Membership

Chairpersonship

No changes during this period.

New members

The membership of the IFIP Working Group 1.02 has been maintained as follows: Norbert Blum, Germany, Luc Longpre, USA, and Jorma Rissanen, USA, have been excluded, since they have not been active in the field of descriptive complexity for many years.

Christos Kapoutsis, Qatar, Ian McQuillan, Canada, and Beatrice Palano, Italy, have been appointed as new members.

New organisation rules

No changes during this period.

Scientific activities and meetings

Events organised by the Working Group

- *20th International Conference on Descriptive Complexity of Formal Systems (DCFS 2018), Halifax, Nova Scotia, Canada, July 25–27, 2018 (IFIP Working Conference).*

The conference was organized, under supervision of the DCFS steering committee, by Stavros Konstantinidis (Saint Mary's University, Halifax) who was PC co-chair with Giovanni Pighizzini (University of Milano). The scientific part was consisting of 3 invited lectures and 19 regular contributions, selected by a program committee after a standard reviewing process. The proceedings have been published in LNCS series. A special issue of Theoretical Computer Science, devoted to extended versions of selected papers is planned. Around 40 participants attended the conference. Many of them are members of the WG.

- *21th International Conference on Descriptive Complexity of Formal Systems (DCFS 2019), Košice, Slovakia, July 17–19, 2019 (IFIP Working Conference).*

The conference was jointly organized, under supervision of the DCFS steering committee, by the Košice branch of the Mathematical Institute of the Slovak Academy of Sciences, by the Slovak Artificial Intelligence Society (SAIS), and by the IFIP WG 1.02 on Descriptive Complexity. The program committee was chaired by Galina Jirásková (Slovak Academy of Sciences, Košice, Slovakia) and Stavros Konstantinidis (Saint Mary's University, Halifax, Canada). The scientific part was consisting of four invited lectures and 18 regular contributions, selected by the program committee after a standard reviewing process. The proceedings have been published as volume 11612 of the Lecture Notes in Computer Science book series. A special issue of Information and Computation devoted to extended versions of selected papers is in preparation. Around 40 participants attended the conference. Many of them are members of the WG.

Formal meetings of the Working Group

- July 25, 2018, on the occasion of DCFS 2018.
- July 19, 2019, on the occasion of DCFS 2019.

Forthcoming events

- *22th International Conference on Descriptive Complexity of Formal Systems (DCFS 2020).*
The conference will be held from August 24 to 26, 2020 in Vienna, Austria, and it will be organized by Rudolf Freund.
- *23th International Conference on Descriptive Complexity of Formal Systems (DCFS 2021).*
The conference will be held in Seoul, South Korea, and it will be organized by Yo-Sub Han.

- *24th International Conference on Descriptive Complexity of Formal Systems (DCFS 2022)*. The conference will be held in Debrecen, Hungary, and it will be organized by György Vaszil.

Publications

- Stavros Konstantinidis, Giovanni Pighizzini (eds.): *Descriptive Complexity of Formal Systems – 20th IFIP WG 1.02 International Conference, DCFS 2018, Halifax, NS, Canada, July 25–27, 2018, Proceedings*. *Lecture Notes in Computer Science 10952*, Springer 2018.
- Michal Hospodár, Galina Jirásková, Stavros Konstantinidis (eds.): *Descriptive Complexity of Formal Systems – 21st IFIP WG 1.02 International Conference, DCFS 2019, Košice, Slovakia, July 17–19, 2019, Proceedings*. *Lecture Notes in Computer Science 11612*, Springer 2019.
- *Information and Computation*, Volume 259 (2), April 2018, Special Issue with Selected and Extended Papers of the 17th International Conference on Descriptive Complexity of Formal Systems (DCFS 2015), guest editors: Alexander Okhotin, Jeffrey O. Shallit.
- *International Journal of Foundations of Computer Science*, to appear 2019, Special Issue with Selected and Extended Papers of the 19th International Conference on Descriptive Complexity of Formal Systems (DCFS 2017), guest editors: Giovanni Pighizzini, Cezar Câmpeanu.

WG 1.03 — Foundations of System Specification

Chair: Prof. Lutz Schröder, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Vice-Chair: Prof. Markus Roggenbach, Swansea University, Wales, UK

Home page: `ifipwg13.cs.ovgu.de`

2018-19 BRIEF ACTIVITY REPORT

Organisation of WG and Membership

Chairpersonship

No changes.

New members

The group welcomes Peter Csaba Ölveczky, Universitetet i Oslo, as a new member. Dusko Pavlovic, University of Hawaii, has been granted emeritus status. Alexander Kurz, Chapman University, has resigned from the group. The group is keeping a stable membership level of around 40 members (excluding emeritus members), and has considered nine observers in the current report period.

New organisation rules

None.

Scientific activities and meetings

The working group has held a meeting in

- Prague, Czech Republic, April 6-7, 2019 (colocated with ETAPS)

Events organised by the Working Group

- The *8th Conference on Algebra and Coalgebra in Computer Science, CALCO 2019* was held on June 3-6, 2019, in London, UK, in colocation with the 35th Conference on Mathematical Foundations of Programming Semantics, MFPS XXXV.
- The *12th International Conference on Graph Transformation, ICGT 2019*, was held in Eindhoven, The Netherlands, on July 15–16, 2019, as part of the federated conference *Software Technologies: Applications and Foundations (STAF)*.

Forthcoming events

- The *15th IFIP WG 1.3 International Workshop on Coalgebraic Methods in Computer Science, CMCS 2020*, will be held as a workshop at the *European Joint Conferences on Theory and Practice of Software, ETAPS 2020* in April 2020 in Dublin, Ireland.

WG 1.05 — Cellular Automata and Discrete Complex Systems

Chair: Prof. Pedro P.B. de Oliveira, Mackenzie University, São Paulo, Brazil

Vice-Chair: Dr. Nazim Fatès, INRIA Nancy, France

Secretary: Prof. Katsunobu Imai, Hiroshima University, Japan

Home page: www.iec.hiroshima-u.ac.jp/ifip15

2018-19 BRIEF ACTIVITY REPORT

The Working Group 1.5, on Cellular Automata and Discrete Complex Systems, reestablished in 2008, has the following attributions:

- To establish and maintain a permanent, international, multidisciplinary forum for the collaboration of researchers in the field of Cellular Automata (CA) and Discrete Complex Systems (DCS).
- To provide a platform for presenting and discussing new ideas and results.
- To support the development of theory and applications of CA and DCS (e.g. parallel computing, physics, biology, social sciences, and others) as long as fundamental aspects and their relations are concerned.
- To identify and study within an inter- and multidisciplinary context, the important fundamental aspects, concepts, notions and problems concerning CA and DCS.

The scope of the working group encompasses all fundamental aspects of cellular automata and discrete complex systems, including: Dynamics, Algebraic aspects, Complexity issues, Emergent properties, Formal language processing, Models of parallelism and distributed systems, Phenomenological descriptions, Scientific modeling and Practical applications.

Organisation of WG and Membership

The current Chair was reelected for another term, following an anonymous process by means of the Belenios voting system (www.belenios.org). After the election, the former Co-Chair and Secretary were invited to carry on in their posts for another term and both accepted.

Chairpersonship

The 2019 annual admin meeting of WG 1.5 took place during AUTOMATA 2019, on June 24th, with the following attendance:

Members of the WG 1.5: Martin Kutrib, Andreas Malcher and Pedro de Oliveira (*Chair*).

Guests: Alonso Castillo-Ramirez and Pablo Arrigui.

The meeting started with the Chair presenting some slides prepared by the organiser of AUTOMATA 2020, to be held in Stockholm, Sweden, in August 2020, under the auspices of the Karolinska Institute, organised by Hector Zenil (<https://www.hectorzenil.net>).

In the sequence, Pablo Arrigui (<http://pageperso.lif.univ-mrs.fr/pablo.arrighi/>) presented the slides of the planned organisation details of AUTOMATA 2021, a firm bid by members of the University of Aix-Marseille, in Marseille, France. More details below in this report.

There was a concern during the meeting (and among the organisers of AUTOMATA 2019) as to why so few submissions happened for this year's edition of the event. I particularly think that the main reason was the distance from Europe, so that the return of the event to Europe during the next two editions is very likely to increase participation again. But there was one lesson from this year's edition that we should enforce in the forthcoming ones: the participation of students simply participating in the event. It was significant that, while the number of submissions was low this year, the number of participating students was the highest I can remember for years!

Finally, since no new member has been proposed to the group, its present composition remains the same since the last report.

Scientific activities and meetings

Events organised by the Working Group

- AUTOMATA 2019 - The 25th International Workshop on Cellular Automata and Discrete Complex Systems, Guadalajara, Mexico, in June 24-26, 2019.

AUTOMATA 2019 was successfully organised by Alonso Castillo-Ramirez in June 24-26, 2019, in Guadalajara, Jalisco state, Mexico, having the programme committee co-chaired by Pedro de Oliveira. The event had 37 participants, out of whom 20 local students, representing participants from 9 nationalities (Brazil, Chile, Colombia, France, Germany, Italy, Japan, Mexico and Sweden). The technical programme had 8 full papers, 3 exploratory papers, and 4 invited talks.

Particularly worth of notice was the invited talk given by Martin Kutrib, member of WG 1.5, on the 25th 'Silver Jubilee' anniversary of AUTOMATA, during which he traced the history of the event from the very first one, even while showing photographs and sharing very pleasing anecdotal situations of that past, and highlighting special moments along the years. That was indeed a very special moment in the event and once again we take the opportunity to express our gratitude to Martin for having agreed to share his historical vision of AUTOMATA with the participants.

Further details about the event are available in <https://automata2019.wordpress.com>.

Forthcoming events

- AUTOMATA 2020 - The 26th International Workshop on Cellular Automata and Discrete Complex Systems, to be held to be held in Stockholm, Sweden, in August 2020, under the auspices of the Karolinska Institute, organised by Hector Zenil (<https://www.hectorzenil.net>). The actual dates in August 2020 are yet to be confirmed and, following a suggestion given during the meeting, I passed on to Hector a list of conferences that should be taken as reference to avoid date clashes with AUTOMATA. Apart from that, everything seems to be on track, and a preliminary website is up, which will soon be openly shared.
- AUTOMATA 2021 - The 27th International Workshop on Cellular Automata and Discrete Complex Systems. There is a firm bid to have the event at the University of Aix-Marseille, in Marseille, France; the bid is headed by KÉvin Perrot (<http://pageperso.lif.univ-mrs.fr/kevin.perrot/>), with the support of other members of the research group he belongs to (the Natural Computation Group - <https://cana.lif.univ-mrs.fr>) and others, including Pierre Guillon, member of WG 1.5. I have shared their bid with WG 1.5 members previously, and have strongly supported it, but we still need to take a final decision. Still missing for that are some organisational details, yet to be clarified, but I believe everything will be settled by the end of this Summer.

Publications

- A. Castillo-Ramirez and P.P.B. de Oliveira (eds). Cellular Automata and Discrete Complex Systems: 25th IFIP WG 1.5 International Workshop - Proc. of AUTOMATA 2019. *Lecture Notes in Computer Science* 11525, Springer: Heidelberg - Germany, 2019.
- A. Castillo-Ramirez and P.P.B. de Oliveira (eds). *Book of Abstracts and Exploratory Papers of AUTOMATA 2019 - The 25th International Workshop on Cellular Automata and Discrete Complex Systems*, 44 pages, University of Guadalajara: Guadalajara - Mexico, 2019.

WG 1.06 — Term Rewriting

Chair: Prof. Georg Moser, University of Innsbruck, Austria

Secretary: Dr. Martin Avanzini, INRIA Sophia Antipolis, France

Home page: cbr.uibk.ac.at/ifip-wg1.6/

2018-19 BRIEF ACTIVITY REPORT

The Working Group aims to promote research efforts in rewriting and its applications. For that it aims to establish close cooperation between existing groups and to facilitate the emergence of new ones. It wants to increase awareness of rewriting techniques in the computer science community at large and foster development of applications of theoretical advances.

Organisation of WG and Membership

The annual meeting of the IFIP WG 1.6 in 2019 has been co-located with FSCD 2019 in Dortmund and was held on June 26, 2019. The Working Group currently comprises 13 honorary members and 36 active members.

At the annual meeting, the assembly has invited three colleagues to become member. All have accepted: Silvia Ghilezan (Novi Sad), Cynthia Kop (Nijmegen) and René Thiemann (Innsbruck).

Chairpersonship and Secretary

Georg Moser is acting chair of the Working Group. Martin Avanzini is the Working Group's secretary. Their term will end in 2021.

New Members

We have invited three speakers for the annual meeting:

- Silvia Ghilezan, University of Novi Sad, Serbia
- Cynthia Kop, Radboud University Nijmegen, Netherlands
- René Thiemann, Universität Innsbruck, Austria

All three of them have been giving impressive presentations and thus have become members shortly after the meeting.

International Summer School in Rewriting

The 11th *International Summer School in Rewriting* (ISR for short) was held in Paris from July 1 to July 6, 2019. The school was organised by Frederic Blanqui. See the School's website for further information on the organisation and success of the school:

<https://isr2019.inria.fr/>

Finally, the 12th ISR will be held at UCM, Madrid. The school is organised by Narciso Marti Oliet.

Scientific Activities and Meetings

As already stated, the annual meeting of the Working Group took place on June 26 and had the following agenda:

- Presentation by Cynthia Kop (invited)
- Presentation by Rene Thiemann (invited)
- Report on FSCD by Herman Geuvers
- Report on IFIP by Martin Avanzini
- Presentation by Silvia Ghilezan (invited)
- Report on ISR by Hans Zantema
- Business Meeting

The presentations of the three invited speakers were well received. Abstract and slides of these presentations can be found on the WG's homepage.

Furthermore, Herman Geuvers (PC Chair FSCD 2019) gave an (informal) report on FSCD, focusing on the role of rewriting in the conference series and its instance in 2019. This was followed by a brief report on changes in the organisational structure of IFIP and discussion on possible co-location with TC1 meetings in the future.

Moreover, Hans Zantema reported on the status of the 11th ISR, which was later held in Paris. Further, he reported that the ISR is searching for candidate locations for ISR 2021/2022. Finally, Narciso Marti-Oliet gave a brief status report on the organisation of the upcoming ISR at UCM Madrid.

During the concluding Business Meeting it was decided to offer memberships to the invited speakers and that the next IFIP WG 1.6 meeting should take place collocated with FSCD in Paris 13. Precise dates will be decided later via the mailing list.

Events Organised by the Working Group

- The annual meeting of the WG in 2019 has taken place on June 26, 2019.
- The 11th ISR has been organised in Paris in 2019.
- the 12th ISR will be held at UCM, Madrid in 2020.

Forthcoming Events

The next IFIP WG 1.6 meeting will take place collocated with FSCD in Paris 13. Precise dates are still to be decided.

WG 1.07 — Theoretical Foundations of Security Analysis and Design

Chair since 26 June 2019: Prof. Riccardo Focardi, University of Venezia, Italy

Chair from 27 June 2019: Prof. Sebastian Mödersheim, Technical University of Denmark

Vice-Chair: Prof. Véronique Cortier, University of Nancy, France

Secretary: Prof. Luca Vigano, King's College London, UK

Home page: www.dsi.unive.it/IFIPWG1.7/

2018-19 BRIEF ACTIVITY REPORT

The WG 1.7 promotes activities in the area of theoretical foundations of security analysis and design, and has been established in 1999. It mainly aims at investigating the theory of security, as well as of privacy and trust, at discovering and promoting new areas of application of theoretical techniques in computer security and at supporting the systematic use of formal techniques in the development of security related applications.

Organisation of WG and Membership

Currently the WG has 32 members, from 15 countries and 4 continents:

- Europe: 22 (France: 5 , UK: 4, Germany: 3, Italy: 2, Austria, Belgium, Denmark, Ireland, Luxemburg, Netherlands, Spain, Switzerland: 1)
- America: 7 (USA)
- Asia: 1 (China)
- Australia: 2

Chairpersonship

Prof. Riccardo Focardi, University Ca' Foscari, Venice, Italy, elected on 2 March 2016 until 26 June 2019. The new chair is Sebastian Mödersheim, Technical University of Denmark. He has been elected on 27 June 2019.

New and old members

Since September 2018 we gave a new member: Toby Murray (people.eng.unimelb.edu.au/tobym/), University of Melbourne. Toby is very active in the field of theoretical foundations of security.

Gavin Lowe (UK) explicitly asked to quit from the WG since his research focus is not on the WG topics any more.

Scientific activities and meetings

Remarkable results in the field of the WG

The creation of Principles of Security and Trust (POST), the sixth main conference of ETAPS, and the continuous contribution to its organization as Program Chairs has been one of the major outcomes of the WG. POST was established in 2012 after 11 years of the Workshop on Issues in the Theory of Security (WITS) that became in 2011 an associated conference at ETAPS, under the name of Theory of Security and Applications (TOSCA). Almost always, these events originated volumes in the LNCS series and sometimes special issues of archive journals. Unfortunately, after 8 years POST affiliation with ETAPS will be discontinued. The decision has been taken unanimously by the SC in front of *(i)* a drop in the submission number, incompatible with an ETAPS conference; *(ii)* the consideration that switching to a rolling mode would probably reduce the number of submissions even further. The HotSpot workshop has been the informal counterpart of POST for many years. Its informal flavour stimulates the exchange of new ideas in the field of foundations of security. It is the annual WG event where business meetings usually occur. Unfortunately, in the last edition, the workshop received too few submissions and has been cancelled. The future of these WG-supported events will be discussed in the next meeting.

The members of the WG are actively involved in national and international projects on security; as members of the editorial boards of many highly reputed journals; as PC members of many international conferences, and as PC and chairs; as well as in the dissemination of the theory and methodology of security in Universities, international schools (e.g. FOSAD school below), seminars etc.

Events organised by the Working Group

Since September 2018, the WG members have organized the following events:

- 8th International Conference on Principles of Security and Trust (POST 2019). 6-11 April 2019 Prague, Czech Republic. Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2019;
- 32nd IEEE Computer Security Foundations Symposium July 2019, NJ, USA. Stephanie Delaune, co-chair.

Forthcoming events

- 19th International School on Foundations of Security Analysis and Design (FOSAD 2019) University Residential Center of Bertinoro, Italy 26-30 August 2019;
- 24th European Symposium on Research in Computer Security (ESORICS 2019), 23-27 September, Luxembourg. Peter Ryan, General Chair, Steve Schneider, Program co-chair;
- 33rd IEEE Computer Security Foundations Symposium July 2020, Boston, USA. Ralf Kuesters, co-chair.
- Sixth Workshop on Hot Issues in Security Principles and Trust (HotSpot). Date and place to be decided;

Publications

- Flemming Nielson, David Sands (Eds.): Principles of Security and Trust - 8th International Conference, POST 2019, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2019, Prague, Czech Republic, April 6-11, 2019, Proceedings. Lecture Notes in Computer Science 11426, Springer 2019, ISBN 978-3-030-17137-7

- Stéphanie Delaune, Limin Jia (Eds.): 32nd IEEE Computer Security Foundations Symposium (IEEE CSF). June 25-28, 2019, Hoboken, NJ, USA. Proceedings, IEEE Press.

WG 1.08 — Concurrency Theory

Chair: Dr. Ilaria Castellani, INRIA Sophia Antipolis, France

Secretary: Prof. Mohammad Reza Mousavi, University of Leicester, UK

Home page: www.concurrency-theory.org/organizations/ifip

2018-19 BRIEF ACTIVITY REPORT

The aim of this working group is to develop the theoretical foundations of concurrency, exploring the frontiers of existing theoretical models such as labelled transition systems, process calculi, Event Structures and Petri Nets, so as to obtain a deeper understanding of concurrent systems and push forward the associated verification techniques.

Organisation of the WG and Membership

Currently, the WG has 53 members (11 women, 42 men). Since the WG creation in 2005, there has been a turnover of -13, + 14. The gender balance (20 % of women) is slightly higher than that of the concurrency community at large, and we have been constantly trying to improve it, both when recruiting new members and when choosing invited speakers and sending personal invitations for the events we organised.

As some members are expected to step down (mainly, because of retirement), we plan to organise a new round of recruitments in the current year.

Chairpersonship

Dr. Ilaria Castellani (INRIA Sophia Antipolis, France) and Prof. Mohammad Reza Mousavi (University of Leicester, UK) have been coordinating the WG 1.8 since June 2014, respectively as chairperson and secretary of the WG. A round of elections was held by the TC chair in March 2018, which led to their re-election for a second term.

Events organised by the WG

Since 2012, the WG organises an annual event called TRENDS, in affiliation with the conference CONCUR (the main conference in the field). TRENDS was originally a half-day workshop, consisting of invited talks only. Since 2016, it was turned into a full-day workshop, with both invited talks and a number of “highlight talks” given by WG members or other participants. The aim of TRENDS is to stir discussion on recent trends and open problems in Concurrency Theory. It is informal, without proceedings.

- TRENDS 2018: the last edition of TRENDS was held on September 8, 2018, in Beijing, China, as a satellite workshop of CONCUR 2018. The programme consisted of the following 2 invited talks:
 - Nobuko Yoshida, Imperial College, London, UK.
Behavioural Type-Based Static Verification Framework for Go.
 - Marielle Stoelinga, University of Twente, The Netherlands.
Risk management for high tech systems.

and the following 4 highlight talks:

- Lei Bu. *Path-Oriented Reachability Analysis of Composed Linear Hybrid Systems under Shallow Synchronization Semantics.*

- Zhenbang Chen. *Symbolic Verification of MPI Programs*.
- Chen Fu, Andrea Turrini, Xiaowei Huang, Lei Song, Yuan Feng and Lijun Zhang. *Model Checking Probabilistic Epistemic Logic for Probabilistic Multiagent Systems*.
- Cong Tian. *Differential Testing of Certificate Validation in SSL/TLS Implementations: An RFC-Guided Approach*.

TRENDS 2018 was followed by the WG Business Meeting.

Another event that is regularly organised by the WG 1.8 is the workshop OPCT (Open Problems in Concurrency Theory), which aims at identifying the most important open problems in Concurrency Theory. This is a research seminar without proceedings, where participation is on invitation only. Its average duration is of three days. While OPCT is usually organised as a stand-alone event, its 2019 edition was exceptionally held in affiliation with the POPL conference:

- OPCT 2019: the workshop “Open Problems in Concurrency Theory 2019”, took place in affiliation with POPL 2019 in Cascais/Lisbon, Portugal, on January 14-15, 2019, see,

<https://popl19.sigplan.org/track/opct-2019-papers>.

The workshop was organised by the WG 1.8 chair and secretary together with Antonio Ravara and Alexandra Silva (who is also a WG member).

OPCT 2019 was the 3rd edition of the workshop. The previous two editions, which were also co-sponsored by the WG 1.8, took place in Bertinoro, Italy, in June 2014 (<http://opct2014.cs.vu.nl>), and in Vienna, Austria, in June 2017 (<http://opct2017.famaf.unc.edu.ar/Home.html>).

OPCT 2019 was again a successful event, gathering 53 participants (with a very good gender balance for our research domain: 1/3 of women) and 26 talks covering the whole spectrum of Concurrency Theory.

Forthcoming events

A new edition of TRENDS will be organised on August 31, 2019, in Amsterdam, see,

<https://concurrency-theory.org/events/workshops/trends>.

It will be co-located with CONCUR 2019. The programme will include the following 3 invited talks (as well as a number of highlight talks):

- Laura Bocchi, University of Kent, UK.
Time-sensitive protocol design and implementation.
- Joost-Pieter Katoen, RWTH Aachen University, DE.
Towards the Automated Synthesis of Probabilistic Programs.
- Barbara König, University of Duisburg-Essen, DE.
Fixpoint Games.

The workshop will be followed by the WG business meeting, as usual.

Publications

Two special issues of the Journal of Logical and Algebraic Methods in Programming (JLAMP) have been organised: the first one, handled by the WG 1.8 chair and secretary, gathers contributions by the invited speakers of TRENDS 2015 and TRENDS 2016, while the second one, handled by the OPCT 2017 organisers (the WG 1.8 chair and secretary together with two other WG members, Pedro D'Argenio and Ana Sokolova), covers the topics presented at the workshop OPCT 2017.

- JLAMP SI:TRENDS16: JLAMP special issue on Trends in Concurrency Theory (selected invited contributions from the workshops TRENDS 2015 and 2016): the three submitted papers have been accepted and the special issue is under print.
- JLAMP SI:OPCT 2017: JLAMP special issue on Open Problems in Concurrency Theory (associated with the workshop OPCT 2017): the reviewing process is now concluded and the selected papers are about to be printed.

WG 1.09/2.15 — Verified Software

Chair: Dr. Jean-Christophe Filliâtre, CNRS, Orsay, France

Vice-Chair: Prof. Jim Woodcock University of York, UK

Secretary: Dr. Natarajan Shankar, SRI International, US

Home page: <https://www.lri.fr/~filliatr/1.9/>

2018-19 BRIEF ACTIVITY REPORT

The aims of 1.9/2.15 are to contribute to a comprehensive theory of programming that covers the features needed to build practical and reliable programs; to contribute to a coherent toolset that automates the theory and scales up to the analysis of industrial-strength software; and to collect realistic, verified programs as part of the Verified Software Initiative (VSI) Repository.

Since the creation of the group in 2011, we had twelve meetings. These meetings are sometimes co-located with conferences of our domain (e.g. CAV, POPL) to limit travels, though this is not a rule.

We invite different observers to attend our meetings each time, and we collectively decide to elect some of them as new members whenever they participated actively and constructively to our meetings.

Our meetings encourage talks on work in progress and leave much room to discussion. Each talk is typically given one hour.

We also run the VSTTE conference and the Verified Software Competition (vscomp <http://vscomp.org/>), not to be confused with the VerifyThis competition, another competition of our domain).

Organisation of WG and Membership

Chairpersonship

We are discussing a possible change for the Chair of 1.09.

New members

No changes in the members during the period.

New organisation rules

No changes in the organisation rules during the period.

Scientific activities and meetings

Events organised by the Working Group

- We had no meeting in the period (September 2018 – July 2019). We initially planned to have a meeting in Texas on Spring 2019, with the help of the ACL2 people, but that was canceled.

The responsibility for such a low activity over this period is mostly on the Chair, who is definitely overwhelmed. That is one of the reasons why we are thinking of switching to another Chair.

- We contribute to the organization of VSTTE. VSTTE was co-located with CAV in 2018 (July 18-19 2018, Oxford, UK) and in 2019 (July 13-14, 2019, New York City, USA).

Forthcoming events

- We plan to have a meeting by the end of 2019. The location and date are not yet defined.
- Our secretary (Natarajan Shankar, SRI International) is co-organizing a “Verified Software” Programme at the Isaac Newton Institute next summer, from 27th July to 4th September 2020. See <https://www.newton.ac.uk/event/vso> for more details. The organizers also include Tony Hoare, an emeritus member of 2.15. We expect to have members of 1.09 attending this programme (at least some part of it, as it extends over 6 weeks).

WG 1.10 – String Algorithmics & Applications

Chair: Prof. Jan Holub, Czech Technical University in Prague, Prague, Czech Republic

Home page: <http://www.stringology.org/ifip/>

2018-19 BRIEF ACTIVITY REPORT

The WG was re-established in January 2019.

Organisation of WG and Membership

Chairpersonship

Jan Holub was elected as chair of WG for the next three years.

New members

There are 21 members of the re-established WG: Amihood Amir, Hideo Bannai, Travis Gagie, Roberto Grossi, Jan Holub, Costas S. Iliopoulos, Thierry Lecroq, Inbok Lee, Moshe Lewenstein, Stefano Lonardi, Laurent Mouchard, Gonzalo Navarro, Kunsoo Park, Solon P. Pissis, Simon J. Puglisi, M. Sohel Rahman, Rajeev Raman, Wojciech Rytter, William F. (Bill) Smyth, Esko Ukkonen, Bruce Watson.

Formal meetings of the Working Group

The first meeting is planned to August 28, 2019. It is connected to Prague Stringology Conference 2019 and workshop StringMasters.