

REPORT ON DLT 2011

15th International Conference on Development of Language Theory 19-22 July 2011, Milano, Italy

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DLT 2011, the 15th conference in this series on Theoretical Computer Science, was held at **Università del Piemonte Orientale**, a modern university campus on a former industrial area. Conference site was **DISCO**, **Società Cooperativa (DISCO)**, in **Aula Magna** in building U6.

The conference was organized by **DISCO**. The organizing committee consisted of **P. B.**, **P. C.**, **C. F.**, **A. L.** (chair), **D. P.**, **A. E. P.**, **C. Z.**, as well as **T. C.**, **P. P.**, and **C. I.**. Sponsors for DLT 2011 were **Università del Piemonte Orientale** and **EATCS**.

DLT 2011 was attended by 94 participants from 21 countries, details of which are shown below:

IT	24	CA	6	PT	4	JP	2	HU	1	UK	1
DE	14	RU	6	SA	3	US	2	TR	1		
CZ	7	FI	4	BE	2	AT	1	TW	1		
FR	7	KR	4	CH	2	EE	1	TZ	1		

The scientific program consisted of 5 invited lectures, and 34 long presentations as well as 7 short ones (posters), selected from 70 submissions from 28 countries. Details are given in the following tables (2 submissions were withdrawn later), by number of authors and by countries (N number of authors, S submitted, AL accepted long, AS accepted short paper C country, I invited):

N	S	AL	AS
1	14	5	2
2	39	23	
3	8	5	1
4	9	1	4
	70	34	7

Except for 2 posters (all authors of one couldn't come, the author of another one had an accident just before the conference), all contributions were presented by one of their authors.

C	I	S	AL	AS	C	I	S	AL	AS
BE		$1\frac{1}{3}$	$1\frac{1}{3}$		IT	1	$7\frac{1}{6}$	2	2
CA	1	$6\frac{5}{6}$	$3\frac{2}{3}$		JP		2	1	1
CH		1			KR		$\frac{1}{3}$	$\frac{1}{3}$	
CZ		$2\frac{1}{2}$	$2\frac{1}{2}$		MY		$\frac{1}{2}$		
DE	1	8	$6\frac{1}{2}$	$1\frac{1}{2}$	PL		1		
EE		$\frac{1}{2}$	$\frac{1}{2}$		PT		2	2	
ES		$3\frac{1}{2}$			RO		$\frac{1}{2}$	$\frac{1}{2}$	
FI		3	$1\frac{1}{2}$		RS		$\frac{1}{2}$		$\frac{1}{2}$
FR	$\frac{1}{6}$	$11\frac{1}{2}$	$4\frac{1}{6}$	1	RU	1	5	3	
HU		1	1		SK		1		
IL		$\frac{1}{3}$			TR		1	1	
IN		$1\frac{1}{2}$			TW		$\frac{1}{2}$	$\frac{1}{2}$	
IR		2			UK	$\frac{5}{6}$	$3\frac{1}{8}$		$\frac{1}{8}$
IS		$\frac{7}{8}$		$\frac{7}{8}$	US		$3\frac{1}{2}$	$2\frac{1}{2}$	
					Σ	5	70	34	7

DLT 2011 started on Tuesday morning with G M introducing F A , general manager of C M R , who then presented a brief historical overview on U S M -B (founded in 1998 as a full university with 8 faculties, 21 departments, and now more than 850 professors and scientists, 30000 students), and also facts on research in information technology and biotechnology. J K then talked about the history of DLT, as the main conference in automata theory, welcomed the participants ‘Enjoy the conference’, and officially opened DLT 2011.

M C (co-authors G B , S C) gave an excellent first invited talk with ‘Hunting Redundancies in Strings’, starting with an analysis of a Beatles song, combinatorics (repetition, palindromes), pattern matching, text compression, analysis of biological sequences, applications in bioinformatics and analysis of music, also citing Euripides with ‘Who so neglects learning in his youth, loses the past and is dead for the future’.

A very good survey was presented by A R (co-author R V) with the second invited lecture ‘Some Remarks on Automata Minimality’, to appear in H A , on the dependence of minimality of DFA on the set of final states, on graph-theoretic tools, strongly connected automata, uniformly minimal automata, and on the transformation monoid.

A S gave the third invited talk ‘Growth Properties of Power-free Languages’, having some problems with the microphone at the beginning. It was a

very good and interesting survey on combinatorial complexity and growth rate (power-freeness, threshold theorem, factorial languages), the polynomial plateau (common properties, simple and sharp bounds, uniqueness), and growth rates (upper and lower bounds, asymptotics), finishing with some conjectures and open problems.

A good and interesting fourth invited lectures was given by T W (co-authors S F, F H) with '*A Functional Program for Regular Expression Matching*'. He started with cartoons of finding an address in 200 millions emails (solution: regular expression), showed papers by S. K (Representation of events in nerve nets and finite automata) and K. T (Regular expression search algorithms), talked on realization of events by logical nets, what G has to say '*Regular expressions are one of computer science's shining examples of the benefits of good computer science theory*', and on-the-fly + Glushkov NFA + suitable representation of the state set. Finally, he demonstrated a program (writing and running). Unfortunately there is only a rather short abstract of his talk in the proceedings.

The fifth invited lecture '*State Complexity Research and Approximation*' by S Y (co-author Y G) was a very good survey on the history of state complexity (SC), in particular on worst or average SC, 4 fundamental questions concerning SC research (why not studied before in the 60's and 70's?, does there exist a general algorithm to compute SC?, does there exist a good approach to compute SC?, is approximation good enough for theoretical or practical use?), non-existence of a strong motivation and extreme difficulty or impossibility to solve many questions due to computer conditions, non-existence of a general algorithm for SC (undecidable by reduction to 10th Hilbert problem), new approach in SC research, SC approximation (complex for combined operations), and transition complexity and average SC.

Excellent presentations were given by M H, with his traditional trouser holders, after some problems with microphone and screen, on, finishing with a new final family slide, by G Z on sufficient condition to avoid erasing productions in controlled grammars, by V D with the talk (new title) '*Solving Word Problems in Group Extensions over Non-Archimedean Finite Words*', a commercial and historical tour on the field (1910 Dehn, 1955 Novikov, 1959 Boone with undecidability results, Myasnikov, Kharlampovich with fully residually free groups), starting with '*Maybe you don't understand the beginning*' and finishing with '*A gold mine for further research*', and by J B on syntactic complexity of ideal and closed languages expressed as a function of state complexity.

Equally good and interesting presentations were given by N R on non-context-freeness of Abelian primitive words, by S B on average

transition complexity of Glushkov and partial derivative automata, by A N. P (with the longest talk, also having problems with the microphone), on Brzowski's conjecture for the free Burnside group with $x^2 = x^3$, and by J K on the solution of a conjecture by Autebert on non-existence of a minimal full trio with respect to bounded CF languages.

Further good and interesting talks were given Z ´ É on scattered context-free linear orderings, V S on Boolean algebras of regular languages, V V. G on counter-examples to a conjecture of Restivo on non-complete sets, N ˇ J , with her first paper on splicing systems, proving a long standing conjecture on a relation between regular and splicing languages, and Š ˇ S on infinite words being (almost) rich in palindromes.

Also to worth mention are the interesting presentations by G F on prefix normal binary words, by H T , showing a picture of Janusz Brzowski from 1963, on unique NFA, called átomata (from atom), by J S - , managment to present 114 slides, on Fife's theorem, by B H M on a particle based approach to self-organization in cellular automata, and by P M on a relation between parallelogram polyominoes and linear partitions, also thanking organizers and audience *'I am the last in this session and DLT'*.

G B had to skip the end of his talk due to lack of time, YO-S H finished with *'Thank you, COFFEE or questions?'*, and A O , talking very fast, started with *'The algebraic part is entirely by my co-author'*.

The proceedings, edited by G M and A L , containing all invited lectures, (T W 's only as short abstract), and all contributions, have been published as S LNCS 6795.

In the business meeting on Friday afternoon, lead by J K " , G - M talked on DLT 2011, H -C Y presented T as conference site for 2012, and M C M - -V ´ near P for 2013.

In the breaks coffee, tea, mineral water, juice, and pastries were served. Lunch was organized at the conference site as a warm buffet, with fruits and salad, red and white wine, mineral water, juice, coffee and tea.

The social program started on Tuesday evening with a welcome cocktail on which champagne, juice and mineral water was offered. On Thursday we had an excursion in two busses to L C . Before boarding the boat L there was about half an hour time to see some part of the historical centre of Como, in particular the dome. After 2 h boat trip on the southwestern branch of the lake we arrived at B where there was more than 1 h time to see this beautiful village. Subsequently we had a 20 minute walk to reach the parking place of the

busses, and to board them for a one hour bus trip on narrow roads with about 100 bends in the mountainous area, between the southwestern and southeastern branch of the lake to reach R M at B high above the southeastern branch with beautiful view on the mountainous region. Several times the bus had to turn back a little to master bends. Finally, we reached the restaurant where we had the conference dinner, consisting a typical regional dishes, with wine from the region, mineral water, and coffee.

Later J B held a dinner speech, thanking the program and organization committees for their work and the nice weather. It was about 23.30 h when we left the place to reach Milano around 0.30 h.

There was wireless access to the internet in the conference building. Most participants stayed in hotels scattered over the town, sometimes with more than half an hour away by public traffic from the conference site. Due to a bus strike the started half an hour earlier on Thursday and Friday. Apart for some clouds and rain on late Thursday afternoon weather was sunny and warm, with highest temperatures between 25 and 30°C.

Thus **DLT 2001** was a very successful conference again, well organized, and in a warm atmosphere. Next DLT will be held in Taipei, Taiwan, from August 14-17, 2012. Pictures of the conference can be found at <http://dlt2011.disco.unimib.it/pictures/>.