

REPORT ON AFL 2011

13th International Colloquium on Automata and Formal Languages 17-22 August 2011, Debrecen, Hungary

Manfred Kudlek

AFL 2011, the 13th conference in this series, founded by ISTVÁN PEÁK in 1980, took place in DEBRECEN from August 17-22, 2011. Conference site was DEBRECENI AKADÉMIAI BIZOTTSÁG (DAB), the house of the DEBRECEN ACADEMIC SOCIETY.

It was organized by INSTITUTE OF MATHEMATICS AND INFORMATICS, COLLEGE OF NYÍREGYHÁZA, INSTITUTE OF MATHEMATICS, UNIVERSITY OF SZEGED, FACULTY OF MATHEMATICS, UNIVERSITY OF DEBRECEN, and DEBRECEN REGIONAL COMMITTEE OF THE HUNGARIAN ACADEMY OF SCIENCES.

The organizing committee consisted of PÁL DÖMÖSI (chair), ATTILA EGRI-NAGY, JÁNOS FALUCSKAI, SZILÁRD FAZEKAS, GÉZA HORVÁTH, SZABOLCS IVÁN, ZITA KOVÁCS, ZOLTÁN MECSEI, BENEDEK NAGY, ZSOLT NAGY, GYÖRGY VASZIL, and VIKTOR BOVDI, as well as ÉVA DÖMÖSI-RÁPOLTI, MÁRIA KOMJÁTHY, KATALIN PUZSÁR.

AFL 2011 was supported by INSTITUTE OF MATHEMATICS AND INFORMATICS, COLLEGE OF NYÍREGYHÁZÁ, INSTITUTE OF INFORMATICS, SZEGED UNIVERSITY, DEBRECEN REGIONAL COMMITTEE OF THE HUNGARIAN ACADEMY OF SCIENCES, NOVADAT COMPANY, and CZECH-HUNGARIAN BILATERAL RESEARCH PROJECT.

The conference was attended by 62 participants from 13 countries:

HU	29	JP	5	CA	2	IN	1	UK	1
DE	8	FR	3	AT	1	IT	1		
CZ	6	US	3	FI	1	SK	1		

The scientific program consisted of 5 invited talks, and 25 contributions (22 long, 3 short), selected from 31 submissions (another one was withdrawn) from 13 countries. Apart from the contribution by MARÍA DOLORES JIMÉNEZ LÓPEZ, GEMMA BEL-ENGUIX, ADELA GRANDO, all were presented by one of the authors.

C	I	S	AL	AS	C	I	S	AL	AS	C	I	S	AL	AS
CA		$4\frac{1}{12}$	$3\frac{7}{12}$		FR	2	$\frac{5}{6}$	$\frac{5}{6}$		SK		$1\frac{1}{4}$	$\frac{1}{4}$	
CZ		5	2		HU		$2\frac{2}{6}$	2	$1\frac{5}{12}$	UK		3	$\frac{1}{3}$	$1\frac{7}{12}$
DE	1	5	$5\frac{1}{4}$		IN		$1\frac{1}{3}$	1		US	1	$1\frac{1}{2}$	$1\frac{1}{2}$	
ES		$1\frac{1}{6}$	$1\frac{1}{2}$		JP	1	3	3						
FI		$\frac{1}{2}$	$\frac{1}{2}$		RO		$1\frac{1}{2}$	$\frac{1}{4}$						
Σ											5	31	22	3
W												1		

The program of AFL 2011 can be found at <http://www.nyf.hu/afl11/>.

The conference was opened on Wednesday morning by GYÖRGY GÁR, vice-rector for science and innovation of NYÍREGYHÁZA College, talking on ISTVÁN PEÁK, the history of AFL, 13 as the luckiest prime, the Debrecen flower festival, thanking PÁL DÖMÖSI, for the organization, and wishing success and good weather for AFL.

JEAN-ÉRIC PIN, with the first invited lecture '*Equational Descriptions of Languages*', presented an excellent survey on history and motivations of the field, ranging over 45 years, (SCHÜTZENBERGER, McNAUGHTON, EILENBERG, BRZOZOWSKI, I. SIMON, THOMAS, also showing pictures of them). Starting with Birkhoff's, Reitermann's, and Eilenberg's theorems on varieties, he talked on syntactic orders (BLOOM, PIN, WEIL) and preorders, C -varieties, equational theories of lattices, presented examples, and finished with *dreams* for home work, and '*Whole thing so abstract, probably useless*'.

In the good second one, '*K-Restricted Duplication Closure of Languages*', MASAMI ITO presented interesting results on the closure properties of language classes under K -restricted duplication, contextfree being closed whereas regular in general not.

In the third one, ANDREAS MALETTI (co-authors PAWEŁ GAWRYCHOWSKI, MARKUS HOLZER, ARTUR JEŽ, DANIEL QUERHEIM) with '*Notes on Hyper-minimization*' gave a very good overview on the history of a new area of hyper-minimization, on hyper-minimization (kernel states, almost equivalent and merging states), on hyper-optimization, as well as on algorithms and their complexity for them, and their restrictions and limitations.

CHRISTIAN CHOFFRUT (co-author SERGE GRIGORIEFF), in the forth invited talk '*On Relations of Finite Words over Infinite Alphabets*', presented a good and interesting survey on background and context of the area of first order theories on word relations (EILENBERG, ELGOT, SHEPHERDSON, *prefix of, equal length, last letter*, etc.), keeping the notion of finite automata, of first order logic, and showing results of decidable and undecidable theories.

With the fifth invited lecture '*Open Problems on Avoidable Patterns in Partial Words*', FRANCINE BLANCHET-SADRI presented a good and interesting overview on the area, namely on pattern avoidance (Thue-Morse word, avoidability index, K -(un)avoidability, classification of binary patterns, ternary patterns, avoiding Abelian squares and other powers, insertion of arbitrary many holes), and on subword complexity (minimal Sturm'ian partial words, deBruijn partial words).

Also to mention are the very good presentations by JANUSZ BRZOZOWSKI on quotient complexity of star-free languages, and by SHINNOSUKE SEKI on characterizations of bounded semilinear languages by 1- and 2-way deterministic automata, as well as the good and interesting ones by GALINA JIRÁSKOVÁ on quotient complexity of bifix-, factor-, subword-free regular languages, by ANDREAS MALETTI (due to

an accident his coauthor couldn't come) on hyper-minimization of deterministic weighted FA over semifields, by FRIEDRICH OTTO on deterministic pushdown-CD systems of stateless deterministic R(1)-automata, by HIROSHI UMEO on new small 2-dimensional cellular automata for firing squad synchronization, and by SARAH NELSON on operations preserving primitivity of partial words with 1 hole. A very fast presentation was given by KANDURU VENKATA KRISHNA.

A special birthday session took place on Sunday morning, celebrating 5 anniversaries. PÁL DÖMÖSI held the first laudatio in honour of MASAMI ITO's 70th birthday (* 1941 December 17), mentioning research of more than 40 years (codes, semigroups Q), and MASAMI's hobby of travelling with trains.

The second laudatio was given by ZOLTÁN ÉSIK honouring WERNER KUICH's 70th birthday (* 1941 June 17), talking on the scientific CV and research (continuous, inductive, partial Conway semirings, automata theory, algebraic series) of the honoured.

SÁNDOR HORVÁTH presented the third in honour of CHRISTIAN CHOFFRUT's 65th birthday (* 1946 May 5), talking on his long personal cooperations with CHRISTIAN who speaks many languages, and on the research of the honoured (rational relations, combinatorics, Presburger logic, algebra, number theory, and 'so much much more').

In reverse, ZOLTÁN ÉSIK's 60th birthday (* 1951 June 25) was honoured in the fourth laudatio by WERNER KUICH, who presented ZOLTÁN's scientific CV, in particular the cooperation with STEPHEN BLOOM who passed away on October 14, 2010, on equational fix point theories, and finished with 'Ad multos annos!'.

Finally, BENEDEK NAGY gave the fifth laudatio honouring MARTIN KUTRIB's 50th anniversary (1961 August 18), presenting the scientific CV (cellular automata, desriptional complexity) of the jubilee, illustrated with photos.

All jubilees received presents as e.g. Hungarian wine.

The conference was closed on Monday early afternoon with some concluding remarks by MANFRED KUDLEK, ANDRÁS ÁDÁM, KANDURU VENKATA KRISHNA, and PÁL DÖMÖSI.

The proceedings, edited by PÁL DÖMÖSI and SZABOLCS IVÁN, containing all contributions and invited lectures, unfortunately that by CHRISTIAN CHOFFRUT only as extended abstract, have been published by INSTITUTE OF MATHEMATICS AND INFORMATICS, COLLEGE OF NYÍREGYHÁZA.

In the coffee breaks coffee, tea, mineral water, juice, and snacks were offered. Lunch was served in the university restaurant NAGYERDEI ÉTTEREM, at 10 minutes walking distance from the conference site.

Wireless access to internet was available in the conference building.

The social program started on Wednesday evening with a reception in the uni-

versity restaurant. A warm buffet, mineral water, juice, beer, Hungarian wine NAGYRÉDE (white, rosé, red) were offered. It lasted well until 22 h.

The excursion on Friday afternoon brought us to HORTOBÁGY, about 35 km west of Debrecen, and famous for the traditional Hungarian herdsmen, in particular cowboy (*csikos*) culture, horse riding and excursions into PUSZTA (unfortunately we didn't have time for that). We could walk around, buy Hungarian souvenirs at a big market, or have some recreation in one of the cafeterias or in the *Big Csárda* (NAGYCSÁRDA).

After that, from 18 till 22 h we had the conference dinner at LÁTÓKÉPI CSÁRDA (*Watching Picture Inn*), where we got typical Hungarian dishes, wine, mineral water and coffee. A music band was performing (not only Hungarian) gipsy tunes.

On Sunday we could watch the procession of the traditional *Flower Festival* (DEBRECENI VIRÁG KARNEVÁL) for which we got free tickets. It lasted from 8 till 12 h. In the afternoon we could visit some of the many other events such as folklore performances with dance and music, or typical Hungarian dishes.

Most participants not from Debrecen stayed in the academy house, in one of the three buildings of KOSSUTH LAJOS KOLLÉGIUM on the university campus, or in hotels in town. Pictures of AFL 2011 are available on the web site of the conference. Weather was hot and sunny, with highest temperatures above 30° C.

Thus AFL 2011 was a successful conference again, well organized and in a hospitable atmosphere. *Viszontlátásra Debrecen!*