REPORT ON DCFS'2003

5th Workshop on Descriptional Complexity of Formal Systems
Budapest, Hungary, July 12 – 14, 2003

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DCFS'2003, the 5th workshop in this series, was held at Budapest from July 12 to 14, 2003. It took place at *MTA SZTAKI* (*Magyar Tudományos Akadémia - Számitástechnikai és Kutatóintezet*, Computer and Automation Research Institute of the Hugarian Academy of Sciences), and was organized by **Erzsébet Csuhaj-Varjú**, **Mariann Kindl**, and **György Vaszil**.

DCFS'2003 was attended by 35 participants from 12 countries as given below

D	11	CDN	3	I	3	E	2	IND	1	RO	1
I	5	H	3	A	2	F	2	MD	1	SK	1

The scientific program consisted of 5 invited lectures and 21 contributions (13 regular and 8 short) from 14 countries, as given in the following table (C, I, R, S for country, invited talk, and regular, short paper, respectively):

C	I	R	S	C	I	R	S	C	I	R	S
A		$\frac{2}{3}$		F		2	$\frac{1}{2}$	MD			$\frac{1}{4}$
CDN		$\frac{1}{6}$	2	H		1	$\frac{1}{2}$	RO	1	1	$\frac{5}{8}$
CZ	2	$\frac{1}{6}$	1 $\frac{1}{6}$	I		1		SK		1	
D	1	5 $\frac{1}{2}$	1 $\frac{1}{3}$	IND		1		USA		$\frac{1}{2}$	
E	1		1 $\frac{1}{8}$	J			$\frac{1}{2}$				

DCFS'2003 was opened on Saturday morning by **Erzsébet Csuhaj-Varjú**, speaking on the workshop, and thanking all speakers and the program committee. On Monday she also asked us not to enter SZTAKI dressed with shorts, according to the rules of the institute.

All talks were presented by one of the authors. The program of DCFS'2003 can be found at `http://www.sztaki.hu/mms/dcfs03`.

An excellent first invited lecture *'Some Complexity Aspects of Hybrid Networks of Evolutionary Processors'* was presented by **Victor Mitrana**. It was a uniform and systematic survey on the complexity of generating, accepting, and problem solving devices, as well as size of languages, also stating a number of open problems.

Another excellent and very interesting presentation was the second invited talk *'Succinctness in Quantum Information Processing'* by **Jozef Gruska**, on the

development of new information technology, usable techniques, paradigms, concepts, the laws and goals of physics and informatics, quantum computing, and Kolmogorov complexity.

Markus Holzer, in his traditional conference shirt, presented another excellent one with the third invited talk *'Aspects on the Descriptional Complexity of Finite Automata'*. It was his first beamer talk, having scanned all his nice slides known from former conferences, on finite automata, descriptional complexity, and applications (*'A very ambitious title'*).

The fourth invited lecture *'Descriptional Complexity Issues in Membrane Computing'* by **Gheorghe Păun** was also an excellent and very interesting one on universality, polynomial solutions of hard problems, normal forms, decidability, implementation, application, and descripyion by multisets. The brainstorm in February and **WMC'2003** in Tarragona was mentioned, too (*'Nature has arranged something at all levels'*). It was finished with *'Small is beautiful but big is necessary'*.

The fifth invited talk *'Descriptional Complexity of Eco-grammar systems'* by **Alica Kelemenová** was a good tutorial and survey on the history, development and power of eco-grammar systems.

Only some personal impressions can be given on the contributions.

Andreas Malcher gave good talk with nice results on 2-way communications in cellular automata, **Martin Kutrib** another good and interesting one the hierarchy of FA's, non-recursive trade-offs, and open problems for 2-way FA's. **Filippo Mora** gave a good presentation on the number of states of NFA's to accept the complement of a language. An interesting talk on reliability was given by **Frank Niessner** (*'It may pay off to make errors'*).

František Mráz gave a nice presentation on 2-way restarting automata, motivated by linguistics, and **Holger Petersen**, who also asked the previous speaker, a very good one on complexity results for prefix grammars. **Sándor Horváth** had a good presentation (dedicated to the birthday of the author of this report, but with some delay of more than two years) on primitive words and palindromes. **Alexander Okhotin**, using two projectors, had a good, interesting, and fast presentation on linear conjunctive grammars, and different equivalent devices.

Marion Oswald presented a nice talk on register machines, **Sergey Verlan** a good and interesting one on splicing (*'because you are still tired from axiom I'll be short'*), and **Yuri Rogozhin** an interesting one on insertion and deletion.

Good and interesting talks were also presented by **Ian McQuillan** on ciliates, by **Henning Bordihn** on the number of components in distributed grammar systems, by **Ralf Stiebe** on positive valence grammars, and by **György Vaszil** on permitting and forbidding conditions in simple semi-conditional grammars.

The proceedings, edited by **Erzsébet Csuhaj-Varjú**, **Chandra Kintala**,

György Vaszil, and **Detlef Wotschke**, containing all invited talks and contributions, have been published as a report of SZTAKI.

In the breaks coffee, tea, mineral water, and cakes were available. On Saturday we had lunch in Kisborostyán, on Monday it was served in the restaurant of SZTAKI, both about 50 m from the institute. Most participants stayed in Professor's Guest House, some also in Summer Hotel Hill and in Congress Park Hotel Flamenco, all within 10 minutes walk distance from SZTAKI.

The social program on Sunday started at 15.30 with a sightseeing tour through Budapest. The guide, Attila, explained us many facts about the town. We passed by *Népstadion*, the diplomats' quarter, stopped at *Hősök Tére*, continued to pass the cathedral and parlament, before we reached *Buda vár* where we walked to *Halász bástya*. It offered a nice view over *Pest*, but we nearly lost **Giuditta Franco** and her brother. The next stop was at the *Citadella* on *Gellért hegy*, with another beautiful view over Budapest. The tour ended at Rakpart 3 on the Danube quay. There we had to wait a little bit until 19 h before we could enter the boat Attila.

The boat trip on Danube went northwards until *Úpesti vasúti híd* (a railway bridge) and then southwards until another bridge *Lágymanyosi híd*. When entering the boat we got *pálinka*, champagne, and mineral water. The workshop dinner consisted of a buffet with bread, cheese, sausages, salads, cakes, 'rétesek' (strudel), as well as soup, fish, rice, meat, and potatoes. White Dél Balatoni Cuvéc 2001, and red Egri Kékfrankos 2001, both dry wines, were also served. Erzsébet Csuhaj-Varjú wished us *'Enjoy the trip!'* During the boat trip we could enjoy nice views on both sides of the Danube. It was by 22 h when we returned to the starting place.

Weather was fine, sunny and with highest temperatures between 25 and 30° C. DCFS'2003 was a successful workshop, well organized and in a nice atmosphere.