Call for participants

Advanced School
Combinatorial Pattern Matching
Paris, France, July 9-13, 1990

Lecturers :

Dr. A.V. Aho

A.T.& T., Bell Laboratories,U.S.A.

Prof. Alberto Apostolico

Professor at University of l'Aquila, Italy, and

Purdue University, USA

Prof. Maxime Crochemore

Professor at University Paris 7, France

Prof. Zvi Galil

Professor at University of Tel-Aviv, Israël,

and Columbia University, USA.

Prof. Esko Ukkonen

Professor at University of Helsinki, Finland

Aim of the school

The intention is to present to young researchers a wide variety of combinatorial methods used in the domain of Pattern Recognition. The school is also an occasion to gather specialists that are able to support interesting discussions on the subject.

Outline of the school

The advent of large mass memory devices has made possible to store important amount of data. Information retrieval systems applied to these date require that powerful methods must be applied. Solutions to Pattern Matching problems provide efficient algorithms for a large variety of applications such as textprocessing, image analysis or genome investigations. This seminar will present a panorama of combinatorial pattern matching methods including up-to-date discoveries on the subject.

Topics

Exact string-searching : on-line and off-line algorithms, space considerations, index.
Approximate string-searching : Hamming distance, edit distance, distances based on subsequences.
Dynamic programming on strings.
Parallel computations on strings
Applications to linguistics.

Dates

The school will be held the second week of July 90, 9-13 at Ministère de la Recherche et de la Technologie in Paris. Next week is ICALP' 90 in Warwick. July 14 is the national day in France. The end of the school coincides with the open-air dances organised in several places in Paris for this celebration.

Application

Enrollment to the school is limited to about twenty qualified participants. There are no fees and no strict deadlines.
Participants will be encouraged to present and discuss their own research. A few guest lectures by leading specialists will also be scheduled.

To apply, send a short résumé to :

Prof. M. Crochemore, CPM School, LITP, Université Paris 7, 2 Place Jussieu, 75251 Paris Cedex 05, France.
Tel. : (33) 1 43 29 52 96 or (33) 1 43 25 98 74.
E-mail : mac@litp.ibp.fr

Combinatorial Pattern Matching

School

Paris 9-13 July 1990

(MRT, 1, rue Descartes, Paris 5°)

PROGRAM

Monday, July 9, 1990

10 : 00   Welcome

11 : 00   A.V. Aho, Algorithms for matching keywords

12 : 00   E. Ukkonen, Edit distance and the approximate string-matching problem

Lunch break 1 : 15 - 2 : 15

Chairman : E. Ukkonen

2 : 15   A. Apostolico, Optimal detection of squares in strings

3 : 15   M. Atallah, A faster parallel algorithm for a matrix searching problem

3 : 45   J. Néraud, Unitary monoid with two generators: an algorithmic point of view

Tuesday, July 10, 1990

9 : 30   M. Crochemore, Two-way string-matching

Coffee break 10 : 30 - 11 : 00

11 : 00   E. Ukkonen, Fast algorithms for approximate string-matching

12 : 00   A.V. Aho, Extensions of string-matching

Lunch break 1 : 15 - 2 : 15

Chairman : A.V. Aho

2 : 15   M. Gross, Processing of large texts

3 : 15   C. Iliopoulos, PRAM algorithms for computing the canonical form of a circular string

3 : 45   K. Park, Dynamic programming with convexity, concavity and sparsity

4 : 15   T. Lecroq, A variation on Boyer-Moore algorithm

4 : 45   G. M. Landau, Parallel prefix-suffix computations

Wednesday, July 11, 1990

9 : 30   E. Ukkonen, Approximate string-matching in static strings

Coffee break 10 : 30 - 11 : 00

11 : 00   A. Apostolico, Optimal detection of squares in strings (2)

12 : 00   M. Crochemore, About periods in strings

Lunch 1 : 15 - 2 : 15 Free afternoon

Thursday, July 12, 1990

9 : 30   A.V. Aho, Pattern matching algorithms in the UNIX system

Coffee break 10 : 30 - 11 : 00

11 : 00   M. Crochemore, Automata for string-matching

12 : 00   Z. Galil, Recent results in stringology

Lunch break 1 : 15 - 2 : 15

Chairman : A. Apostolico

2 : 15   C. Choffrut, On the automaton of Boyer-Moore

3 : 15   M. Régnier, Average-case analysis of Boyer-Moore algorithm

3 : 45   J-C. Spehner, To recognize the factors of a finite language in a
                      text in linear time

4 : 15   J-Y. Kim, On approximate string-matching

4 : 45   D. Revuz, Minimizing acyclic automata

School Banquet 8 : 00 pm

Friday, July 13, 1990

9 : 30   Z. Galil, On the exact complexity of string-matching

Coffee break : 10 : 30 - 11 : 00

11 : 00   A. Apostolico, Fast parallel Lyndon decomposition with
                       applications

12 : 00   Z. Galil, Sparse dynamic programming

Lunch break : 1 : 15 - 2 : 15

Chairman : Z. Galil

2 : 15   K. Hashiguchi, String-matching problem over free partially
commutative monoids

3 : 15   P. Dufour, Search of repeated factors in a circular word

3 : 45   M. Zipstein, Transducers for arithmetic coding

4 : 15   W. Chang, Approximate string-matching in sublinear expected
                      time

4 : 45   R. Quong, Pattern matching by updating sparse tables

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COMBINATORIAL PATTERN MATCHING SCHOOL

Paris - 9-13 July, 1990

I had the great pleasure of spending the week of July 9-13, 1990 in Paris at the Combinatorial Pattern Matching School organized by Professor Maxime Crochemore of the Laboratoire d'Informatique Théorique et Programmation of the University of Paris.

Professor Crochemore had invited five leading experts and two dozen young researchers from around the world to present recent results and current research directions in the field of combinatorial pattern matching. Overall, the talks represented a nice blend of mathematics, theory and computational experience.

Professor Alberto Apostolico of the Universities of l'Aquila, Italy, and Purdue, USA, spoke about recent progress in parallel techniques for string matching. Professor Crochemore discussed the combinatorial structure of periods in strings and how these could be exploited to derive efficient string matching algorithms.

Professor Zvi Galil of the Universities of Tel-Aviv, Israel, and Columbia, USA, spoke about applications of string matching to DNA sequence analysis. Professor Esko Ukkonen of the University of Helsinki summarized the recent advances in dynamic programming techniques for approximate string matching problems.

I had an opportunity to talk about some of my favourite topics: algorithms for matching keywords and regular expressions, and their extensions. There were also guest lectures by Professor C. Choffrut, Professor Maurice Gross and Professor K. Hashiguchi. Many of the young researchers also gave talks on their recent results.

The conference was very well organized and the backdrop of Paris made the occasion thoroughly enjoyable as well as technically rewarding.

Alfred V. Aho

Combinatorial Pattern Matching

Proceedings of the first school (9-13 July 1990).