

REPORT ON IWOCA 2010

21st International Workshop on Combinatorial Algorithms

26–28 July 2010, King’s College London, U.K.

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The 21st IWOCA was held in the Great Hall of the Strand Campus, King’s College London (KCL), 26–28 July 2010. The meeting was sponsored and supported financially by KCL and the London Mathematical Society; it was hosted by the Algorithm Design Group in the KCL Department of Computer Science. The local Organizing Committee, cochaired by **Tomasz Radzik** and **German Tischler**, did an outstanding job; the Programme Committee was cochaired by **Costas Iliopoulos** and the author of this report. The Proceedings, edited by the PC cochairs, are being published by Springer in their Lecture Notes in Computer Science series as “post-proceedings” — that is, appearing two or three months after the workshop so as to enable changes to be incorporated that result from discussions with other workshop participants.

IWOCA is a descendant of the original *Australasian Workshop on Combinatorial Algorithms*, first held in 1989, then renamed *International* in 2007 in response to consistent interest and support from researchers outside the Australasian region. The workshop’s permanent website can be accessed at

<http://www.iwoca.org/>

where links to previous meetings, as well as to IWOCA 2010, can be found.

Using LISTSERVE and other e-mail lists, the IWOCA 2010 call for papers was distributed around the world, resulting in 85 contributed papers. The Easy-Chair system was used to facilitate management of submissions and refereeing, with three referees selected from the Program Committee assigned to each paper. A total of 31 papers were accepted, subject to revision, for presentation at the workshop and publication in the LNCS Proceedings. An additional 13 papers were accepted for poster presentation, of which eight are included as four-page papers in the Proceedings. Authors and titles of all 44 accepted papers are available at the IWOCA 2010 website. The workshop also featured a problem session, organized by **Joe Ryan**, and four invited talks by **Alan Frieze**, **Gregory Kucherov**, **Mirka Miller**, and **Dorothea Wagner**.

The number of participants in IWOCA 2010 more than doubled the number of speakers: altogether 75 researchers attended, affiliated to institutions in 20 different countries on five continents (Africa, Asia, Australia, Europe, North America). The nations represented were

Australia (4), Canada (5), Czech Republic (6), France (8), Germany (7), India (1), Ireland (1), Israel (1), Italy (7), Japan (5), Norway (1), Pakistan (1), Poland (2), Russia (1), Slovakia (2), Slovenia (1), South Africa (1), Taiwan (1), UK (16), USA (4).

Here are brief summaries of the invited talks, in order of their presentation:

- (1) **Mirka Miller**, University of Newcastle, Australia: *Constructions of Large Graphs and Digraphs of Given Diameter and Maximum Degree* — a survey of recent progress in a research area with numerous practical applications, together with a knowledgeable outline and analysis of research directions likely to be significant in the future.
- (2) **Dorothea Wagner**, University of Karlsruhe, Germany: *Clustering of Static and Temporal Graphs* — a survey of a research area with growing applications to networks of all kinds (for example, in the social sciences and biology), with particular focus on algorithmic aspects of quality measures for graph clustering.
- (3) **Alan Frieze**, Carnegie Mellon University, USA: *The Karp-Sipser Matching Algorithm and Refinements* — an analysis of a well-known greedy graph matching algorithm in the context of sparse random graphs, presenting new performance results and describing its application to finding a maximum matching.
- (4) **Gregory Kucherov**, J.-V. Poncelet Laboratory, Russia & Laboratoire d'Informatique Fondamentale de Lille, France: *Seeding Methods for Biosequence Search: Algorithmic Ideas and Applications* — a discussion of the use of spaced seeds as a technique for searching DNA sequences, describing a new method for designing seeds adapted to different search situations, together with applications to protein search and mapping reads from high-throughput sequencing technology.

The contributed talks were divided into nine sessions, titled as follows:

- Graph Theory & Graph Algorithms
- Polynomial-Time Graph & Hypergraph Algorithms
- Random Processes & Randomized Algorithms
- Fixed-Parameter Tractability
- Patterns in Trees & Pyramid Pebbling

- Strings I
- Strings II
- Complexity: Boundary between NP-Hardness & Polynomial Time
- Graph Algorithms & Computational Geometry

It had been a warm summer in London, and the weather continued to cooperate throughout a delightful Thames cruise on the riverboat *Viscountess*, where the conference banquet was held. As suggested in the Photo Gallery at

<http://www.thamescruises.com/gallery.php>,

London, seen from its ancient river, especially in the hours leading up to the close of a fine day, looked a great deal more grand than it had earlier that day to us traffic-dodgers on the grimy Strand.

Immediately after IWOCA 2010, a new, rather offbeat workshop was held, *StringMasters*, a meeting of researchers in string algorithms that includes no formal presentations: the idea is that participants come with problems and questions to discuss, go away with new ideas for collaborative research contributions. StringMasters 2010 was also sponsored by the Department of Computer Science at KCL, with welcome support from the Institute of Mathematics and Its Applications. There was an overlap of about 20 participants between the two meetings; the research output of StringMasters will be published in a special issue of the Journal of Discrete Algorithms. For further details, see

<http://www.stringmasters.org/index.php>

IWOCA meetings are already scheduled for the next five years, through 2015, spread over four continents:

2011 University of Victoria, Canada (**Sue Whitesides**)

2012 Kalasalingam University, India (**Subramanian Arumugam**)

2013 Université de Rouen, France (**Thierry Lecroq**)

2014 University of Newcastle, Australia (**Joe Ryan**)

2015 University of Minnesota, Duluth, USA (**Dalibor Froncek**)