Topic 13
Architectures and Algorithms
for Multimedia Applications

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In the recent years multimedia technology has emerged as a key technology, mainly because of its ability to represent information in disparate forms as a bit-stream. This enables everything from text to video and sound to be stored, processed, and delivered in digital form. A great part of the current research community effort has emphasized the delivery of the data as an important issue of multimedia technology. However, the creation, processing, and management of multimedia forms are the issues most likely to dominate the scientific interest in the long run. The aim to deal with information coming from video, text, and sound will result in a data explosion. This requirement to store, process, and manage large data sets naturally leads to the consideration of programmable parallel processing systems as strong candidates in supporting and enabling multimedia technology. Therefore, this fact taken together with the inherent data parallelism in these data types makes multimedia computing a natural application area for parallel and distributed processing. In addition to this, the concepts developed for parallel and distributed algorithms are quite useful for the implementation of distributed multimedia systems and applications. Thus, the adaptation of these methods for distributed multimedia systems is an interesting topic to be studied.

These facts are also reflected by a number of conferences and workshops exclusively devoted to parallel and distributed multimedia processing. The "Workshop on Parallel and Distributed Computing in Image Processing, Video Processing, and Multimedia (PDIVM)" is an annual workshop co-organized by the author of this introduction in the framework of the "International Parallel and Distributed Processing Symposium (IPDPS)" (see `http://www.cosy.sbg.ac.at/~uhl/pdivm.html`). "Parallel and Distributed Methods for Image Processing I – IV" is an annual conference organized in the context of SPIE's annual meeting (published so far as SPIE proceedings no. 3166, 3452, 3817, and 4118). Also, several special sessions at various conferences have been devoted to these or similar topics. For example, the "2002 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'2002)" featured special sessions on "Parallel and Distributed Image Processing (PDIP 2002)" and "Parallel and Distributed Multimedia Processing & Retrieval (PDMPR 2002)". The EuroPar Topic 13 "Architectures and Algorithms for Multimedia Applications" stands out from comparable conference special sessions due to its high scientific quality ensured by a rigorous review process. Out of 12 submitted pa-

pers, 4 have been accepted as regular papers (33%), 3 as short papers (24%), and 5 contributions have been rejected (41%). In total, 46 reviews have been received for the 12 papers (3.83 reviews per paper on average !).

The accepted papers reflect very well the diversity of research themes covered by the titel of the topic. Four out of seven accepted papers represent the classical parallel computing field whereas the remaining three papers cover distributed multimedia. Dedicated hardware (extensions) suited for multimedia processing are discussed in "Novel Predication Scheme for a SIMD System-On-Chip" and "Performance Scalability of Multimedia Instruction Set Extensions", whereas "MorphoSys: A Coarse Grain Reconfigurable Architecture For Multimedia Applications" focuses on multimedia processing with reconfigurable hardware which is an important trend in this area. Mapping of a recent multimedia standard (i.e. H.26L) to a general purpose parallel architecture is investigated in "A Parallel Implementation of H.26L Video Encoder". Distributed multimedia systems are represented by the papers "Deterministic Scheduling of CBR and VBR Media Flows on Parallel Media Servers" and "Double P-Tree: A Distributed Architecture for Large-Scale Video-on-Demand". Finally, a distributed multimedia application is described in "Message Passing in XML-based Language for Creating Multimedia Presentations".

The diversity of papers shows the liveliness of this research area. We feel that this topic is an important contribution to EuroPar and to the field of parallel computing in general. Last but not least, we wish to thank the topic vice-chairs Suchendra M. Bhandarkar and Michael V. Bove as well as the local chair Reinhard Lüling for organising the reviews and the referees for their valuable suggestions and comments.