

INTRODUCTION

This volume contains the proceedings of the *Tenth International Congress on Medical Informatics*, MIE 91, that will be held in Vienna, Austria, August 19–22, 1991.

The MIE 91 Congress was organized by the *European Federation for Medical Informatics* (EFMI) in cooperation with the *Austrian Computer Society* (OCG) and the *Austrian Society for Biomedical Engineering* (OGBMT). It follows the previous congresses in Cambridge (1978), Berlin (1979), Toulouse (1981), Dublin (1982), Brussels (1984), Helsinki (1985), Rome (1987), Oslo (1988), and the Congress 1990 in Glasgow.

The proceedings contain 199 contributions to the MIE 91 Congress. They cover all presentations which are part of the scientific programme of MIE 91, among them 157 paper presentations with an average of five pages, 28 poster presentations again with an average of five pages, and 14 abstracts of demonstrations with an average of one page. The papers included were selected by an International Programme Committee out of over 300 submissions after careful review by at least two international reviewers (for whose estimable efforts we are especially thankful). The recommendations of the reviewers were incorporated in the final texts. Some papers were reworked by a professional translator to obtain a high quality of presentation. Several submissions could not be considered for presentation at MIE 91 because of shortage of congress time and limitations in the number of pages of the proceedings.

The scientific topics present in the proceedings volume at hand range from information and communication systems, knowledge-based systems, signal and image processing, health care, biometry and biomathematics, research and epidemiology, classification and coding, and nursing, up to computer-assisted education, medical curricula, and even robotics in medicine. They are interdisciplinary in nature and may therefore be of interest to a variety of professionals: medical informatics and health information scientists, medical computing specialists, public health and hospital administrators, physicians, nurses, other allied health personnel, and consultants in the various health fields.

There are several prominent themes that are the main topic of a paper, poster, or demonstration or occur again and again within various contexts:

First, a highly prevalent topic is medical information and communication systems: hospital, medical, clinical, ward, nursing, health, and executive information systems, hospital and data communication networks and PACS, drug information systems (database, interaction, monitoring), and related issues such as standardization of information exchange. The proceedings' Subject Index, for example, contains a total of 40 cross-references to the above-mentioned keywords. Although industry has already offered several types of information systems for hospitals, clinical wards, departments, laboratories, and physicians' offices, their application is at least partially not advanced enough and therefore not to the contentment of the medical user, so research seems still highly necessary.

Second, a "hot" topic is knowledge-based systems with 62 cross-references in the Subject Index. This topic is not only discussed in several Medical Expert Systems' sessions but is also part of sessions such as biosignal and image processing, computer-assisted instruction, and information systems and decision support. Some areas of knowledge-based systems are discussed in detail. This concerns, for example, knowledge representation, knowledge acquisition and learning, knowledge models, and evaluation issues. Several contributions report on clinical applications of knowledge-based systems and thus demonstrate their achieved practical usefulness.

Moreover, some recent topics of great research interest were part of the MIE 91 Congress and reports are included in the proceedings: fuzzy set theory, fractals, neural networks, parallel computation, and bioinformatics. These presentations provide an indication of some future developments and may act as a starting point for those becoming more interested.

The MIE 91 Congress gathered participants from all over the world, although mainly Europeans. This is reflected by the authors of the proceedings' contributions; altogether, over 550 researchers have reported their results in this volume. By considering only the first author of each paper, 27 different countries can be counted that contributed to this volume.

The great variety of scientific topics and countries that will be present should guarantee both an interesting international MIE 91 Congress in Vienna in August and a fruitful study of the proceedings by those interested in Medical Informatics.

K.-P. Adlassnig, G. Grabner, S. Bengtsson, and R. Hansen (Eds.)
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