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EDITORIAL

On the status and relaunch of the *AIIM* journal

With this issue, we present *Artificial Intelligence in Medicine* with a new layout and cover—and introduce the new logo of *AIIM*. The journal was founded 15 years ago by Kazem Sadegh-Zadeh who transferred the editorship to me in June 2000 (the first issue under the new editorship was published in January 2002). The editorial office, associate and book review editors, members of the editorial board and I, together with the many voluntary manuscript reviewers drawn from an international scientific community, and the publisher, Elsevier have done their best to establish an international journal that publishes both original methodological research and interesting application articles from the large and diverse field of artificial intelligence (AI) in medicine.

A relaunch of this nature, which includes changes in the size and format of the journal (as evidenced by its colourful new cover), calls for a critical analysis of the present state of the journal, the validity of its aims and scope, and its editorial policy. Apart from the current editorial practice and its achievements to date, it is important to analyze whether the journal is still a driving force in AI in medicine—as it was intended to be from the very start [1,2]—given the major changes in technology and society in recent times.

As mentioned in my inaugural editorial ([3], pp. 3, 4), the aims and scope of *AIIM* are as follows:

To publish original articles from a variety of interdisciplinary perspectives concerning the theory and practice of AI in theoretical and clinical medicine, human biology, biomedicine and bioinformatics, and in health care, health and medical technology.

Areas that are of particular theoretical interest include *knowledge representation, automated reasoning, intelligent communication, computational theories of learning,* as well as *signal, image, speech* and *natural language understanding*. The theory, engineering, and practice of *computational, knowledge-based* and *agent-based intelligent systems* in clinical medicine,

biomedicine, and health care and of *software intelligence* built into medical instruments, equipment, robotic or prosthetic devices are of special practical interest. Further topics are methodological, philosophical, ethical, psychological and social aspects of medical AI.

The above-mentioned aims and scope of *AIIM* are still valid. Hence we will continue to accept submissions from these areas. As shown in a simplified diagram (Fig. 1), we solicit submissions that, on one hand, describe either computational or symbolic methodological approaches to AI and, on the other hand, are either applied to pure quantitative medical data, biosignals, medical images, or to medical data perceived on a qualitative level obtained by abstraction or aggregation, to textual medical information, or to symbolic knowledge at a low or high conceptual level. The latter designates medical relationships between entities such as symptoms, signs, laboratory test results, diseases and diagnoses, therapies, or prognoses.

With this repertoire of methods and applications, the *AIIM* journal offers room for the publication of a large volume of achieved results, provided they contribute to the methodological research and practical application of AI systems in medicine.

This policy has led to a large number of manuscripts being submitted to the journal and also helped us in selecting those of the highest quality for publication (see Table 1).

To increase the readability of *AIIM* research articles, we request that authors explicitly structure abstracts as prescribed originally for science publications: objective, methods and material, results, and conclusion. Variants of this such as objective, background, methodology, results, discussion, and conclusion or, alternatively, for system descriptions, introduction, background, design considerations, system description, status report, lessons learned, and future plans are also structures that help readers to judge what they may expect from the article on hand (cf., also [4]).

Furthermore, we will continue to publish special topical issues on interesting methodological
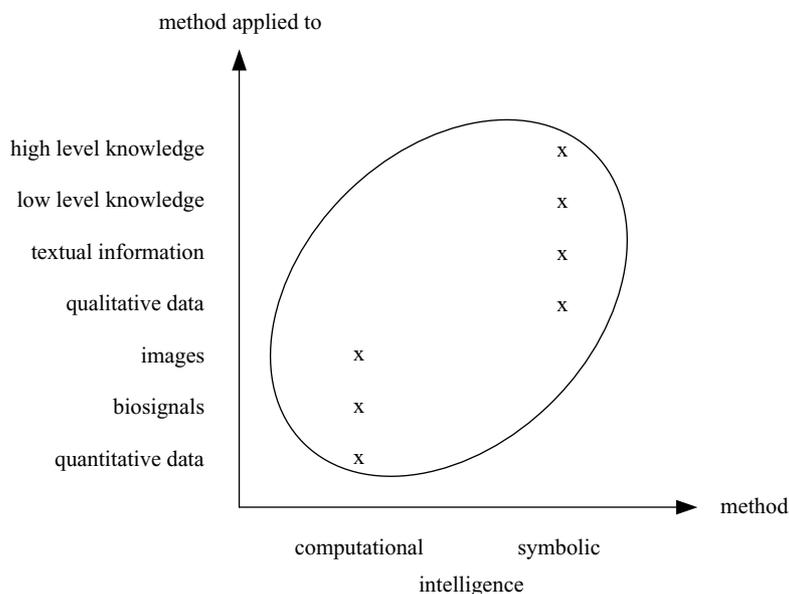
Figure 1 Rough overlap of computational and symbolic approaches to artificial intelligence and their application to the processing of medical data or symbolic medical information. Usually—but not exclusively—computational intelligence is applied to measured data, signals, and images in medicine, and symbolic intelligence to the processing of medical knowledge.

research or a series of convincing applications compiled by Guest Editors who are outstanding experts on the selected topic. At present, we publish four to five special issues from a total of nine journal issues per year. Perhaps a more appropriate number would be in the region of three to four special issues per year; as this would avoid the backlog of accepted manuscripts needing to be published in regular issues. On the other hand, we will increase the rate of methodological review articles to provide the readers of *AIIM* with comprehensive up-to-date overviews on specific topics. We plan to publish at least three methodological reviews per year. We invite our readers to submit topics of particular importance in any area of AI in medicine for special issues as well as methodological reviews.

Moreover, as evidenced in this issue, we have introduced categories for the different contributions to be published in *AIIM*. These include: research articles, methodological reviews, special issue articles, book reviews, editorials, guest editorials, and letters to the editor. Guest editorials are, of course, mandatory for guest editors of special issues, and

are also welcomed from colleagues interested in presenting new ideas or developments in the field of AI in medicine. Letters to the Editor that provide additional data on a previously published article or comment on it are also welcomed. Letters to the editor may offer a line of scientific discussion that links several issues on a specific subject and thus make the journal more lively.

It would be impossible to edit an international journal without the voluntary work of *AIIM*'s international team of reviewers. The editorial policy of *AIIM* prescribes a minimum of three extended reviews for each submitted paper: ideally two from reviewers who evaluate the methodological quality, and one from a medical authority who assesses the appropriateness of the chosen medical application area. In addition to identifying submissions worthy of inclusion in the *AIIM* journal, our reviewers offer authors advice on how to improve the submitted manuscripts. The reviewers' comments may point out a fundamental misconception, suggest ways to reorganize or clarify the material in the paper, or recommend that the author provides better

Table 1 Number of submitted manuscripts and acceptance rates

Manuscripts	Second half of 2000	2001	2002	2003
Submitted	19	82	136	178
Accepted	9	37	61	47
Pending	0	0	0	8
Acceptance rate (%)	47.4	45.1	44.9	26.4—30.9

explanations, definitions, diagrams and tables, examples, or improve spelling, grammar, or fluency in English. Thus, virtually no manuscript is printed in its original submitted form. Reviewers usually scrutinize submissions pertaining to their area of expertise and propose major changes.

More than 1200 reviews from more than 700 reviewers have been written and sent to the authors since July 2000. I would like to thank all of those volunteers who have served as our reviewers. Their effort is an indispensable factor in making *AIIM* a significant source of information on methods and applications of AI in medicine. We will continue with this review policy, however, being the Editor who receives the submitted manuscripts and distributes them to the reviewers, I will be more selective as to whether the manuscripts should be sent out. To save the valuable time and effort of the reviewers, I will forward only those manuscripts that either add to the formal, methodological body of AI in medicine, or show interesting areas of application with distinct results, or clearly describe lessons learned from the undertaken research or application. Besides, on behalf of our readers, I must ensure that articles published in *AIIM* are carefully written in comprehensible English. I do not mean to sound harsh. In fact, being a non-native English speaker I certainly understand how difficult it is for non-native speakers to write fluent English. Nevertheless, the written word must communicate; and the reader must be able to understand the author easily and clearly. Manuscripts written in a manner that makes it difficult for the reader to understand the author's message will be returned to the author for improvement before being sent to reviewers (cf., also [5]).

With the above-mentioned changes in form, content, and the editorial process, we hope to be able to increase the quality of *AIIM* and make the journal even more attractive to our readers. However, I would like to include an important message to our contributors here. The stringent review and acceptance procedure detailed above is not intended to deter aspiring researchers from sending their articles. Please do not hesitate to send us your work.

To safeguard your reputation as an author and ours as a journal, we will do our best to guide the scientific review process and the revisions, while the publisher Elsevier will provide expert typesetting, galley proofing, and printing.

I firmly believe that AI in medicine is a striving research field of growing importance for humankind, and *AIIM* can play a leading role in this process. We will achieve this together by showing that the methods and applications of AI can be successfully introduced into biomedical, biotechnical, and clinical research as well as medical, clinical, and health care practice. The knowledge and experience gained from our work must benefit the patient who suffers from illness, the medical personnel who care for the patient, and the financing institutions whose support is crucial for health care.

Let us take the next steps ahead together and use our knowledge and experience to mould the future we envisage as professionals, writers, and human beings.

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