The future in sight

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Journal of Mathematical Imaging and Vision. Editor-in-chief Gerhard X. Ritter. Kluwer. 4/yr. DFL439.

THIS new journal will add to an already large array of titles in the field of image production, image processing and computer vision. Its stated editorial aim is to provide a forum for mathematical expositions in the field of imaging science. To this end, the editor has assembled an impressive editorial team of 30 well-known image specialists. Papers have been solicited from a vast technical area, ranging from biological vision to image processing and even electron optics.

The rationale behind the journal is that mathematicians are currently discouraged from working on imaging and vision because their output is seen as too 'mathematical' for engineering journals, yet too 'applied' for mathematics journals.

There does seem to be some historical evidence that a hard divide between mathematical and engineering journals has not served the imaging research community. An example is the theory of wavelets, which is now widely acknowledged to be an important mathematical resource as well as a tool with wide engineering applications. A large part of the motivation for the early work in this area came from image processing, and yet in 1988 Engrid Daubeches published a key paper entitled "Orthonormal basis of compact wavelets" in a mathematics journal, *Communications in Pure and Applied Mathematics*. Conversely, another important paper on a similar subject was published by Stephane Mallat in the engineering journal *Institute of Electrical and Electronic Engineers Transactions*, which is not widely read by Mallat's fellow mathematicians. The real communication between this group of workers seems to have been achieved using a mixture of circulated reports and personal letters. It could be argued that the theory of wavelets would have developed more quickly if there had been a high quality journal in a 'middle ground' between mathematics and engineering, particularly if the lead time to publication was short.

If *Journal of Mathematical Imaging and Vision* can provide encouragement to mathematicians to get their hands dirty with image-processing problems then this will be a good thing. The predicted market for image-related products in the next century is vast and there remains a host of technical problems to be solved, many of them of a deeply mathematical nature,

before the market is fully realized. It does seem a pity therefore that mathematicians are not better represented on the editorial board.

The first few issues contain many interesting papers of a highly competitive quality. The material does have a mathematical bias but no more than, say, the *IEEE Transactions on Pattern Analysis and Machine Intelligence* (the current top dog in this field). What is distinctive about the material in the new journal is that, in line with the editorial aim, a much wider range of topics is covered. The presentation is good. A compact size (roughly A5), coupled with a double-column format, a decent type size and top quality paper gives the impression of a polished and modern product. A reasonable personal subscription rate is available. □

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Accolades and brickbats

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Applied Intelligence: The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies. Editor-in-chief Moonis Ali. Kluwer. 4/yr. DFL384.
The International Journal on Artificial Intelligence Tools. Editor N. G. Bourbakis. World Scientific. 4/yr. $195 (institutional); $100 (personal, and institutions from developing countries).

THE appearance of any new journal in the area of artificial intelligence (AI) must be viewed against a background of ten years of intense academic interest in the field and the concomitant rapid growth of publications.

Applied Intelligence is a primary research journal that aims to focus on the integration of AI techniques in constructing 'intelligent' computer systems. Each issue typically contains five papers of around 10,000 words each. *Artificial Intelligence Tools* is also a primary research journal but, as its name suggests, is more focused on tools and techniques than fundamental or applications research. It has about five papers per issue, though these are typically quite long, around 14,000 words each.

The preamble to *AI Tools* comments: "Artificial Intelligence has become an important and attractive research area offering many practical applications and solutions to scientists as well as other professionals. It has a rapidly increasing impact on our society and in the commer-

cial domain . . . . In response to these activities, a number of AI periodicals are being published worldwide. Most of them deal with the theory of AI and/or AI applications." Note the very positive assessment of AI's contribution so far and the sanguine reference to "a number of AI periodicals . . . published worldwide".

There is certainly a case for a journal of this kind. In recent years, AI has changed from a kind of empirical science to a discipline more like mathematics, and there are few outlets for practical papers about software methods. However, as 'tools' stray into 'techniques', the distinction between the kind of material published in *AI Tools* and that published in many other AI and computer science journals becomes rather blurred. I would judge that perhaps as many as 50 per cent of the articles in it could appear in any number of other AI journals. In addition, the range of topics covered seems very broad, and one wonders whether the journal has enough distinctiveness to establish itself on a long-term basis. Nevertheless, I found much of interest in the journal, and the quality of contributions is generally high.

The philosophy of *Applied Intelligence* is based on the claim that AI has come through two phases of development: the opening phase of research on basic questions, and then a phase of working on applications (notably expert systems). It is now moving, according to the editor, into a new phase with an "emphasis on the integration of multiple approaches in solving real-life, complex problems" in which real success will be achieved only by combining results and techniques from the earlier phases. The attitude to AI's current achievements is rather pessimistic by comparison with the upbeat assessment of the editor of *AI Tools*. This is typical of the whole field of AI, which attracts accolades and brickbats in about equal number; it would be nice to know the true position.

It is more surprising, given the apparently clear focus of the journal, that the four issues available for review have few papers on applications or on integration of methods. As with *AI Tools*, the journal does not yet appear to have carved out a distinctive style for itself. But the quality of the papers is high and the journal is attracting contributions from prominent workers. Perhaps this can in part be attributed to the impressive editorial board. Although membership of an editorial board is usually only symbolic (busy scientists have little time for editorial work), big names add credibility to a publication, and the editor has managed to sign up 70 of them.

I found little uniformity of style or structure in the presentation of the papers in either journal. This bothers me. It is a