

Editorial

Advanced Engineering Informatics is a healthy journal. The quality of papers is increasing steadily and the number of submissions is growing every year. Other more abstract statistics, such as those calculated by the Institute for Scientific Information (ISI), are also showing that the journal is doing well. For example, the current impact factor for the journal is at its highest value ever.

As editors, we often have to return submissions to their authors without review because they are out of the scope of the journal. Therefore, this Editorial provides a detailed description of the scope of the journal, which we hope will lead to a better understanding of the type of papers we are looking for so that potential authors will be able to decide whether or not to submit their research contributions to *Advanced Engineering Informatics*.

Computing is

- (1) a skill to be mastered
- (2) an engineering discipline
- (3) a science

This journal publishes papers that make progress in (2) and (3) with emphasis on illustrative examples and validation coming from (2). A paper describing a new application of known methods falls under (1) and therefore, it is out of the journal's scope. A paper making progress in (3) without a detailed engineering example is also out of scope. The requirement for engineering relevance (2) means that papers dealing with applied computer science areas such as software engineering are out of scope unless the paper presents a clear motivating engineering test case and credible evidence of its impact on an engineering discipline (civil, mechanical, electrical, etc.).

The journal *Advanced Engineering Informatics* has greatest interest in aspects of science (3) that support knowledge intensive engineering tasks. Engineers in practice are now skilled in the craft of using computational tools for tasks such as numerical analysis, drafting, detail design and aspects of project planning. The journal seeks research that significantly advances the methods used to perform those tasks and new methods that support additional engineering tasks. Current and future computing opportunities require

scientifically founded applications of computer science principles. Furthermore, these principles need to be adapted and enriched to account for the unusually demanding application contexts that are common in engineering. This is the field of *advanced* engineering informatics.

Opportunities and challenges of supporting knowledge intensive tasks are present at all phases of engineering projects, including infrastructure management as well as disposal and demolition. Within each stage, there are themes such as representation, reasoning, visualization and user-interface design, collaboration, control and change management. Engineering informatics is the application of advanced computing methods to engineering tasks. Relevant computing methods include complex knowledge representations that are clear to users and easily modifiable; exploration and search in exponentially complex search spaces; visualization and flexible engineer-computer interface methods that empower rather than hinder; control of service behavior including self diagnosis and repair; and computer supported collaborative work for higher quality communication. The objectives of advanced engineering informatics are to make engineering decision-making more reliable, spontaneous and creative. Goals of the journal are to provide the science base to help achieve these objectives. We welcome all papers that provide original contributions to this field.

We would like to welcome the following new members of the Editorial Board: Ian Flood (University of Florida, Gainesville), William O'Brien (University of Texas, Austin), Lucio Soibelman (Carnegie Mellon University), Vineet Kamat (University of Michigan), Eric Lutters (University of Twente), Kikuo Fujita (Osaka University) and Soonhung Han (Korea Advanced Institute of Science and Technology). Finally, we would like to thank retiring Board members L. Blessing, M. Clayton and D. Pham for their generous service to this journal over many years.

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