

INSTRUCTIONS FOR AUTHORS

AIMS AND SCOPE

AIEDAM: Artificial Intelligence for Engineering Design, Analysis and Manufacturing is a journal intended to reach two audiences: *engineers and designers* who see AI technologies as powerful means for solving difficult engineering problems and *researchers in AI and computer science* who are interested in engineering applications of AI and in the theoretical issues that arise from such applications. The journal publishes significant, original articles about AI theory and applications based on the most up to date research in all branches and phases of engineering. Suitable topics include analysis and evaluation, selection, configuration and design, manufacturing and assembly, and concurrent engineering. Specific subareas include cognitive modeling; creativity; learning; qualitative reasoning; spatial reasoning; graphics and modeling; constraints and preferences; style and brands; human-computer interaction; multimodal interaction; computational linguistics; design and process planning; scheduling; simulation; optimization; distributed teams and systems; multiagent applications; design rationale and histories; functional, behavioral, and structural reasoning; knowledge management; and ontologies. **AIEDAM** is also interested in comprehensive review papers, as well as in practicum papers that describe original, major applications of state-of-the-art AI techniques to important engineering problems, with enough details to help others build similar systems. In addition to the rapid publication and dissemination of unsolicited research papers, **AIEDAM** is committed to producing special issues on important, timely topics. **AIEDAM** is indexed in Compendex Plus, SciSearch, Research Alert, and CompuMath Citation Index.

ORIGINALITY AND COPYRIGHT

To be considered for publication in **AIEDAM** a manuscript cannot have been published previously or be under review for publication elsewhere. Papers with multiple authors are reviewed with the assumption that all authors have approved the submitted manuscript and concur about its submission to **AIEDAM**. A Transfer of Copyright Agreement must be executed before an article can be published. Government authors whose articles were created in the course of their employment must so certify in lieu of copyright transfer. Authors are responsible for obtaining written permission from the copyright owners (authors, editors, and publisher) to reprint or adapt any previously published material included in their article. These permissions must be provided before an article can be published.

MANUSCRIPT SUBMISSION AND REVIEW

All papers for publication consideration by **AIEDAM** should be submitted electronically through ScholarOne Manuscripts at: <http://mc.manuscriptcentral.com/aie>. Submitted manuscripts are first sent to the Editor-in-Chief (or the Guest Editors for submissions to Special Issues) who will determine the suitability of the paper for the Journal. The Editor-in-Chief and Guest Editors are authorized to render an immediate "reject" decision on manuscripts without review should they deem them unsuitable or inappropriate.

After a submission is approved, a peer review process will be initiated. Generally a manuscript is sent to at least three reviewers to assess its strengths and weaknesses. Reviewers make recommendations on the suitability of the manuscript for the Journal based on several criteria including originality, significance and impact, and style and organization.

Authors can check the status of their papers in review by logging on to the online submission system. After an editorial decision is made, an email containing the comments from the reviewers and the editor will be sent to the author. The decision email is also accessible at the Author Center of the online system.

MANUSCRIPT PREPARATION AND STYLE

Both the initial submission and final article should be double-spaced and have 1 in. (2.5 cm) margins throughout, including

footnotes, references, tables, and figure captions. The position of tables and figures should be clearly indicated and in sequence in the text. Footnotes, tables, and figure captions, as well as figures, should be provided separately at the end of the article. Accepted articles must be in MS Word. LaTeX will only be permitted when there are numerous complex mathematical equations.

MANUSCRIPT ELEMENTS AND ORDER

Manuscripts should be organized as follows:

Title page. This is page 1. The title should be concise, informative, and free of abbreviations, chemical formulae, technical jargon, and esoteric terms. This page should include (a) the article's full title; (b) the names and affiliations of all authors; (c) the name, mailing address, telephone number, and E-mail address of the corresponding author; (d) a short title of 40 characters or less; and (e) a list of the number of manuscript pages, tables, and figures.

Abstract and keywords page. This is page 2 and should include (a) the article's full title, (b) an abstract of no more than 300 words, and (c) up to 5 keywords or phrases that reflect the content and major thrust of the article. The abstract should give a succinct account of the objective, methods, results, and significance of the subject matter.

Introduction. This section begins on page 3 and should clearly state the objective of the research in the context of previous work bearing directly on the subject. An extensive review of the literature is usually not appropriate.

Notations in text. Customary abbreviations will be accepted and the authors are recommended to employ *Système Internationale (SI/metric)* units. Special and unusual symbols should be clearly presented and in a common font. Spell out acronyms at first use, and use only acronyms thereafter. All equipment supplies and products stated in the article should have the manufacturer name and location identified at first mention.

Tables. Tables should be numbered consecutively with Arabic numerals, and each should be double-spaced on separate pages after the references. A short explanatory title and column headings should make the table intelligible and a footnote should define all terms without reference to the text. All tables must be cited sequentially and their approximate positions indicated in the text.

Figures and captions. The number of figures should be the minimum necessary to make the essential points of the paper. Figures should be no larger than 6 × 8 in. (approx. 200 × 250 mm) and should be included in a separate file. Figures should be composed to occupy one column (20 picas or 8.3 cm) or two columns (41.5 picas or 17 cm) after reduction. Diagrams and illustrations must have a professional appearance and be created with high-resolution lettering to permit reduction. To assure legibility, letters, numbers, and symbols on figures should all be the same size and have a minimum height of 2 mm (i.e., 6 points on the pica scale) when reduced. Figures should be separate and not incorporated into the text copy. Each figure must be cited sequentially and its approximate position clearly indicated within the text. Figures must be numbered consecutively with Arabic numerals and be accompanied by a descriptive double-spaced caption provided at the end of the article. The captions should concisely describe the figure, identify any symbols and/or calibration bars, and define any terms or acronyms. Acceptable figure file formats are MS Word, EPS, JPEG, TIFF, PS, and PDF.

Artwork should normally be in black and white; if authors have color figures, the publisher will provide a price quotation for the additional production costs. However, color figures can appear online free of charge. All figures must be printed separately and identified with the short title of the paper, figure number, and figure orientation (top or bottom). Three complete sets of figures should be carefully packaged in protective envelopes, one to accompany each copy of the manuscript.

References. The alphabetical list of references begins a new page after the text. Each in-text citation must have a corresponding reference and vice versa. Only conference papers, theses, and published or in press articles and books should appear in this list.

All authors' names should be included, followed by the year of publication. For journals, the full title of the journal, volume, issue number, and inclusive page numbers should be provided. For books, the full title should be given, followed by the editors, volume number (if any), page numbers, place of publication, and publisher. Citations in the text should read Brown and Goel (2010) or (Brown & Goel, 2010). Where there are more than two authors the citation should read Brown et al. (2010). When more than one paper by the same authors has appeared in the same year, they are distinguished by (Brown & Goel, 2010a, 2010b). Multiple citations in the text should be in chronological order (Dym, 1994; Birmingham, 1999; Brown, 2010).

Journal or Magazine Article

Brown, D.C. (2010). AI EDAM at the cutting edge. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 24(3), 281–282.

Frey, D., Birmingham, W., & Dym, C. (2010). Design pedagogy: representations and processes [Guest editorial]. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 24(3), 283–284.

Knight, T., & Sass, L. (2010). Looks count: computing and constructing visually expressive mass customized housing. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 24(3), 425–445.

Book

Dym, C.L. (1994). *Engineering Design: A Synthesis of Views*. New York: Cambridge University Press.

Chapter in Edited Book

Goodman, J., Clarke, S., Langdon, P., & Clarkson, P.J. (2007). Designers' perceptions of methods of involving and understanding users. In *Universal Access in Human Computer Interaction* (Stephanidis, C., Ed.), LNCS Vol. 4554, pp. 126–136. New York: Springer.

Proceedings With Publisher Identified

Strickfaden, M., & Heylighen, A. (2007). Exploring the cultural capital of design educators. *Proc. Int. Conf. Engineering Design, ICED'07*. Paris: The Design Society.

Proceedings With No Publisher Identified

Shu, L., Hansen, H., Gegeckaitis, A., Moon, J., & Chan, C. (2006). Case study in biometric design: handling and assembly of microparts. *Proc. ASME 2006 Int. Design Engineering Technical Conf. & Computers and Information in Engineering Conf.*, Paper No. DETC2006/DTM-99398, Philadelphia, PA, September 10–13.

Author biographies. Brief author biographies must be provided at the end of each paper; they should not exceed 100 words for each author.

COPYEDITING AND PAGE PROOFS

The publisher reserves the right to copyedit manuscripts to conform to the style of **AIEDAM**. The corresponding author will receive page proofs for final proofreading. No rewriting of the final accepted manuscript is permitted at the proof stage, and authors may be charged for substantial changes.

OFFPRINTS

Access to a free high-quality PDF of the article will be provided to the corresponding author only. A form will accompany the page proofs allowing orders for complete copies of the issue and for the purchase of offprints. The offprint requirements of all coauthors should be included on this form. Orders received after issue printing will be subject to a 50% reprint surcharge.

Special Issue: Computational Design Synthesis

Guest Editorial

MATTHEW I. CAMPBELL AND KRISTINA SHEA

Computational Design Synthesis 207

Special Issue Articles

UJJWAL PAL, YING-CHIEH LIU, AND AMARESH CHAKRABARTI

Evaluating FuncSION: A Software for Automated Synthesis of Design Solutions for Stimulating Ideation During Mechanical Conceptual Design 209

CORINNA KÖNIGSEDER AND KRISTINA SHEA

Systematic Rule Analysis of Generative Design Grammars 227

AMIR HOOSHMAND AND MATTHEW I. CAMPBELL

Layout Synthesis of Fluid Channels Using Generative Graph Grammars 239

JAMES HUMANN, NEWSHA KHANI, AND YAN JIN

Evolutionary Computational Synthesis of Self-Organizing Systems 259

BENJAMIN P. COOREY AND JULIE R. JUPP

Generative Spatial Performance Design System 277

REINHARD KOENIG AND KATJA KNECHT

Comparing Two Evolutionary Algorithm Based Methods for Layout Generation: Dense Packing Versus Subdivision 285

CALL FOR PAPERS

Analogical Thinking 301

CALL FOR PAPERS

Generative and Evolutionary Design Exploration 303

CALL FOR PAPERS

System Architecture Design 305