ARTIFICIAL INTELLIGENCE
An International Journal

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DESCRIPTION

The journal of Artificial Intelligence (AIJ) welcomes papers on broad aspects of AI that constitute advances in the overall field including, but not limited to, cognition and AI, automated reasoning and inference, case-based reasoning, commonsense reasoning, computer vision, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, and reasoning under uncertainty. The journal reports results achieved in addition to proposals for new ways of looking at AI problems, both of which must include demonstrations of value and effectiveness.

Papers describing applications of AI are also welcome, but the focus should be on how new and novel AI methods advance performance in application areas, rather than a presentation of yet another application of conventional AI methods. Papers on applications should describe a principled solution, emphasize its novelty, and present an indepth evaluation of the AI techniques being exploited.

Apart from regular papers, the journal also accepts Research Notes, Research Field Reviews, Position Papers, and Book Reviews (see details below). The journal will also consider summary papers that describe challenges and competitions from various areas of AI. Such papers should motivate and describe the competition design as well as report and interpret competition results, with an emphasis on insights that are of value beyond the competition (series) itself.

From time to time, there are special issues devoted to a particular topic. Such special issues must always have open calls-for-papers. Guidance on the submission of proposals for special issues, as well as other material for authors and reviewers can be found at http://aij.ijcai.org/special-issues.

Types of Papers

Regular Papers

AIJ welcomes basic and applied papers describing mature, complete, and novel research that articulate methods for, and provide insight into artificial intelligence and the production of artificial intelligent systems. The question of whether a paper is mature, complete and novel is ultimately determined by reviewers and editors on a case-by-case basis. Generally, a paper should include a convincing motivational discussion, articulate the relevance of the research to Artificial Intelligence, clarify what is new and different, anticipate the scientific impact of the work, include all relevant proofs and/or experimental data, and provide a thorough discussion of connections with the existing literature. A prerequisite for the novelty of a paper is that the results it describes have not been
previously published by other authors and have not been previously published by the same authors in any archival journal. In particular, a previous conference publication by the same authors does not disqualify a submission on the grounds of novelty. However, it is rarely the case that conference papers satisfy the completeness criterion without further elaboration. Indeed, even prize-winning papers from major conferences often undergo major revision following referee comments, before being accepted to AIJ.

AIJ caters to a broad readership. Papers that are heavily mathematical in content are welcome but should include a less technical high-level motivation and introduction that is accessible to a wide audience and explanatory commentary throughout the paper. Papers that are only purely mathematical in nature, without demonstrated applicability to artificial intelligence problems may be returned. A discussion of the work's implications on the production of artificial intelligent systems is normally expected.

There is no restriction on the length of submitted manuscripts. However, authors should note that publication of lengthy papers, typically greater than forty pages, is often significantly delayed, as the length of the paper acts as a disincentive to the reviewer to undertake the review process. Unedited theses are acceptable only in exceptional circumstances. Editing a thesis into a journal article is the author's responsibility, not the reviewers'.

**Research Notes**

The Research Notes section of the Journal of Artificial Intelligence will provide a forum for short communications that cannot fit within the other paper categories. The maximum length should not exceed 4500 words (typically a paper with 5 to 14 pages). Some examples of suitable Research Notes include, but are not limited to the following: crisp and highly focused technical research aimed at other specialists; a detailed exposition of a relevant theorem or an experimental result; an erratum note that addresses and revises earlier results appearing in the journal; an extension or addendum to an earlier published paper that presents additional experimental or theoretical results.

**Reviews**

The AIJ invests significant effort in assessing and publishing scholarly papers that provide broad and principled reviews of important existing and emerging research areas, reviews of topical and timely books related to AI, and substantial, but perhaps controversial position papers (so-called "Turing Tape" papers) that articulate scientific or social issues of interest in the AI research community.

**Research Field Reviews:** AIJ expects broad coverage of an established or emerging research area, and the articulation of a comprehensive framework that demonstrates the role of existing results, and synthesizes a position on the potential value and possible new research directions. A list of papers in an area, coupled with a summary of their contributions is not sufficient. Overall, a field review article must provide a scholarly overview that facilitates deeper understanding of a research area. The selection of work covered in a field article should be based on clearly stated, rational criteria that are acceptable to the respective research community within AI; it must be free from personal or idiosyncratic bias.

Research Field Reviews are by invitation only, where authors can then submit a 2-page proposal of a Research Field Review for confirmation by the special editors. The 2-page proposal should include a convincing motivational discussion, articulate the relevance of the research to artificial intelligence, clarify what is new and different from other surveys available in the literature, anticipate the scientific impact of the proposed work, and provide evidence that authors are authoritative researchers in the area of the proposed Research Field Review. Upon confirmation of the 2-page proposal, the full Invited Research Field Reviews can then be submitted and then undergoes the same review process as regular papers.

**Book Reviews:** We seek reviewers for books received, and suggestions for books to be reviewed. In the case of the former, the review editors solicit reviews from researchers assessed to be expert in the field of the book. In the case of the latter, the review editors can either assess the relevance of a particular suggestion, or even arrange for the refereeing of a submitted draft review.
Position Papers: The last review category, named in honour of Alan Turing as a "Turing Tapes" section of AIJ, seeks clearly written and scholarly papers on potentially controversial topics, whose authors present professional and mature positions on all variety of methodological, scientific, and social aspects of AI. Turing Tape papers typically provide more personal perspectives on important issues, with the intent to catalyze scholarly discussion.

Turing Tape papers are by invitation only, where authors can then submit a 2-page proposal of a Turing Tape paper for confirmation by the special editors. The 2-page proposal should include a convincing motivational discussion, articulate the relevance to artificial intelligence, clarify the originality of the position, and provide evidence that authors are authoritative researchers in the area on which they are expressing the position. Upon confirmation of the 2-page proposal, the full Turing Tape paper can then be submitted and then undergoes the same review process as regular papers.

**Competition Papers**

Competitions between AI systems are now well established (e.g. in speech and language, planning, auctions, games, to name a few). The scientific contributions associated with the systems entered in these competitions are routinely submitted as research papers to conferences and journals. However, it has been more difficult to find suitable venues for papers summarizing the objectives, results, and major innovations of a competition. For this purpose, AIJ has established the category of competition summary papers.

Competition Paper submissions should describe the competition, its criteria, why it is interesting to the AI research community, the results (including how they compare to previous rounds, if appropriate), in addition to giving a summary of the main technical contributions to the field manifested in systems participating in the competition. Papers may be supplemented by online appendices giving details of participants, problem statements, test scores, and even competition-related software.

Although Competition Papers serve as an archival record of a competition, it is critical that they make clear why the competition's problems are relevant to continued progress in the area, what progress has been made since the previous competition, if applicable, and what were the most significant technical advances reflected in the competition results. The exposition should be accessible to a broad AI audience.

**AUDIENCE**

Artificial Intelligence Specialists, Computer Scientists, Cognitive Scientists, Psychologists, Linguists - all both 'pure' and 'applied'.

**IMPACT FACTOR**

2018: 4.483 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

ACM Computing Reviews
Cambridge Scientific Abstracts
INSPEC
Current Contents - Engineering, Technology & Applied Sciences
Mathematical Reviews
Sociological Abstracts
CompuScience
CAD/CAM Abstracts
Computer Abstracts
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INTRODUCTION

The journal Artificial Intelligence (AIJ) welcomes basic and applied papers describing mature work involving computational accounts of aspects of intelligence that is both complete and novel. The question of whether a paper is complete is ultimately determined by reviewers and editors on a case-by-case basis. Generally, a paper should include all relevant proofs and/or experimental data, a thorough discussion of connections with the existing literature, and a convincing discussion of the motivations and implications of the presented work. A paper is novel if the results it describes were not previously published by other authors, and were not previously published by the same authors in any archival journal. In particular, a previous conference publication by the same authors does not disqualify a submission on the grounds of novelty. However, it is rarely the case that conference papers satisfy the completeness criterion without the addition of new material. Indeed, even prize winning papers from major conferences often undergo major revision following referee comments before being accepted to AIJ.

AIJ welcomes papers on: AI and Philosophy, automated reasoning and inference, case-based reasoning, cognitive aspects of AI, commonsense reasoning, constraint processing, heuristic search, high-level computer vision, intelligent interfaces, intelligent robotics, knowledge representation, machine learning, multiagent systems, natural language processing, planning and theories of action, reasoning under uncertainty or imprecision.

The journal reports results achieved; proposals for new ways of looking at AI problems must include demonstrations of effectiveness. Papers describing systems or architectures integrating multiple technologies are welcomed. AIJ also invites papers on applications, which should describe a principled solution, emphasize its novelty, and present an in-depth evaluation of the AI techniques being exploited. The journal publishes an annual issue devoted to survey articles and also hosts a "competition section" devoted to reporting results from AI competitions. From time to time, there are special issues devoted to a particular topic; such special issues will always feature open calls-for-papers. Guidance on the submission of proposals for special issues, as well as other material for authors and reviewers can be found at http://www.aijd.org.

Artificial Intelligence caters to a broad readership. Papers that are heavily mathematical in content are welcome but should be preceded by a less technical introductory section that is accessible to a wide audience. Papers that are only mathematics, without demonstrated applicability to Artificial Intelligence problems may be returned: a discussion of the work's implications on the production of artificially intelligent systems is normally expected.

Types of Paper

Manuscript Length

There is no restriction on the length of submitted manuscripts. However, authors should note that publication of lengthy papers, typically greater than forty pages, is often significantly delayed, as the length of the paper acts as a disincentive to the reviewer to undertake the review process. Unedited theses are acceptable only in exceptional circumstances. Editing a thesis into a journal article is the author's responsibility, not the reviewer's.

Research Notes

The Research Notes section of the journal Artificial Intelligence will provide a forum for short communications with a quick turnaround for publication. The maximum length should not exceed 4500 words (typically a paper with 5 to 14 pages). The intention is that a note, if accepted, will have a guaranteed publication within one year of submission, aiming for 6-9 months. Some examples of suitable Research Notes include, but are not limited to the following:
crisp technical research aimed at other specialists, e.g. a theorem or an experimental result; short position papers on AI methodologies or technologies;
a critique of a position or claim made in the literature;
an extension or addendum to an earlier published paper that presents additional experimental or theoretical results.
Communications, however, that merely report about ongoing or completed work rather than present technical content will not be considered for publication.
Reviews
The following types of contributions are currently published:

1. refereed book reviews;
2. refereed research field reviews;
3. refereed position papers (in the "Turing Tapes" section)

AI Journal Competition Section
Competition Section Papers will describe the competition, its criteria, why it is interesting to the AI research community, the results (including how they compare to previous rounds, if appropriate), and give a summary of the main technical contributions to the field manifested in systems participating in the competition. Papers may be supplemented by online appendices giving details of participants, problem statements, test scores, and even competition-related software. Acceptance criteria: although Competition Section Papers serve as an archival record of a competition, it is critical that they make clear why the competition’s problems are relevant to continued progress in the area, what progress has been made since the previous competition, if applicable, and what were the most significant technical advances reflected in the competition results. The exposition should be accessible to a broad AI audience.

Contact Details for Submission
Full-length manuscripts and Research Notes must be submitted online using the "Submit online to this journal" facility at the following website: http://ees.elsevier.com/artint. Enquiries about papers submitted there should be made via the EES email function (preferably) or to aij.office@gmail.com. Enquiries about possible reviews should be sent to the Review Editors: Randy Goebel at rgoebel@ualberta.ca or Giuseppe De Giacomo at degiacomo@dis.uniroma1.it. Queries related the Competition Section should be directed to the Competition Editor at aij.competition@gmail.com.

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Referees
The editors of the journal Artificial Intelligence notify reviewers in advance that by accepting a manuscript for review they also accept an obligation to maintain confidentiality of the manuscript's contents; this obligation ends only when the manuscript becomes lawfully available to them through another channel without an obligation of confidentiality.

Revisions
It is the Journal's policy that, except in extenuating circumstances, only one revision of a submitted manuscript will be considered for publication in the Journal.

PREPARATION

Use of wordprocessing software
It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts,
superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: https://www.elsevier.com/guidepublication). All figures and tables should be embedded in the text to facilitate reviewing. Please also supply the source files of figures, tables and text graphics. See also the section on Electronic illustrations. To avoid unnecessary errors you are strongly advised to use the "spell-check" and "grammar-check" functions of your wordprocessor.

**LaTeX**
You are recommended to use the Elsevier article class elsarticle.cls to prepare your manuscript and BibTeX to generate your bibliography. Our LaTeX site has detailed submission instructions, templates and other information.

**Article structure**

**Subdivision - numbered sections**
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

**Introduction**
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

**Material and methods**
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

**Theory/calculation**
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

**Results**
Results should be clear and concise.

**Discussion**
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

**Conclusions**
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

**Appendices**
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

**Essential title page information**

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
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Highlights
Highlights are optional yet highly encouraged for this journal, as they increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Abstract
A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Keywords
Immediately after the abstract, provide a maximum of 10 keywords, avoiding general and plural terms and multiple concepts (avoid, for example, "and", "of"). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

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If no funding has been provided for the research, please include the following sentence:

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General points
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• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the published version.
• Submit each illustration as a separate file.
• Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available. You are urged to visit this site; some excerpts from the detailed information are given here.

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TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

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