ARTIFICIAL INTELLIGENCE
An International Journal

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'.

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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](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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