

# IEEE TRANSACTIONS ON HUMAN-MACHINE SYSTEMS (THMS)

Reviewer Guidelines

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## **Overview:**

This document is intended to provide reviewers with general guidance on preparing reviews of manuscripts for THMS. The Journal provides an overarching review philosophy, identifies types of submissions and expected contributions, outlines the review process, identifies specific guidelines for review, and clarifies recommendation categories. This information is intended to promote the general quality of reviews provided to authors to substantiate rejection or promote the quality of manuscript revisions for further consideration for publication.

## **Philosophy:**

In general, THMS seeks expert analysis of research manuscripts as a basis for determining whether submissions contain unique and supported contributions to human-machine systems science. The journal seeks reviews that guide authors to emphasize key aspects of contributions and that provide constructive criticism of flaws in scientific method, as presented in manuscripts. On this basis, the Journal works to provide authors with fair and justified decisions regarding rejection or acceptance of manuscripts with the overarching objective of ensuring high-quality and high impact research publications.

## **Types of submissions:**

At the present time, THMS defines two types of manuscript submissions, including:

- (1) Regular papers that are typically 12 pages in (IEEE double column format) length including references, biosketches and author photos. Regular papers are expected to provide thorough reviews of relevant literature as a basis for motivating research questions. Such submissions are also expected to formulate some testable theory or research hypothesis. Theoretic works are expected to establish literary or empirical bases for justifying each component of any new theory and some approach to validation or preliminary evidence of validity should be provided. Empirical works are expected to follow the scientific method with rigor and clarity of procedures and data analyses. Any limitations of experimentation must be identified along with implications or applications for real-world systems.
- (2) Technical correspondences are typically 6 pages (in IEEE double column format) length including references. Published correspondence with the Journal can be more limited in its coverage as compared to a regular paper. For example a prototype design with a proof of concept evaluation is more in line with a technical correspondence. Correspondence may also include presentation of brief alternative to methods previously published in regular papers or incremental extensions of

theories or models. Technical correspondences do not include biosketches and author photos (so as to limit less the space available for presentation of research).

In general, it is uncommon for regular papers or technical correspondence to exceed the identified lengths (2 to 3 manuscripts per year on an average submission volume of 400 manuscripts). However, authors are permitted to pay over-length charges for an additional page or two so reviewers may, on occasion, see manuscripts of greater length. However, papers longer 13-14 pages will not be considered for the review process.

### **Summary of Review Process:**

Like many technical journals, the THMS review process (for the majority of manuscripts) is comprised of two phases, including a first submission and a revision. A paper may be an extended version of a previous publication (e.g. a conference paper) and, in that case, authors are encouraged to inform the Journal of this fact. Such submissions must present a clear and substantive contribution beyond the prior publication. For example, extensions may be considered for publication if they include collection of new/additional data, application of new/additional analyses, development of new/additional models, and formulation of new/additional metrics. Opposite to this, extensions limited to additional literature review and/or discussion of results would not be considered substantive and would be rejected outright. Furthermore, any reuse of published text in submission of an extension of a prior publication to THMS must be limited to 500-1000 words (in most cases). In the second phase of the review process, the revision, authors are expected to submit a manuscript reflecting substantive changes based on reviewer comments. Authors are also expected to provide the Journal with a detailed response, explaining how the original reviews and comments by an Associate Editor (AE) and the Editor-in-Chief have been addressed. Any and all modifications to the manuscript, based on the responses to reviewer comments, must be clearly marked in the revised version of the manuscript. If any of these materials are missing, incomplete or unclear at each stage of the review process, reviewers are asked to directly notify the AE handling the manuscript so an additional request can be made of the authors.

### **Reviewer guidelines:**

#### ***What to do if you can't read or understand a manuscript...***

(1) THMS is an English language journal. As such, if the English presentation of a study is not sufficient to support comprehension of the motivation, method or outcomes, reviewers can either provide a review of only those sections of the manuscript that are clear or highlight what information is unclear in the submission. Reviewers can also simply submit a recommendation of rejection on the basis of poor English, if a technical evaluation is not possible. The AE will make recommendation that the authors consult a professional English writing service and will provide any preliminary technical criticisms, based on his or her review of the submission (if any).

***How to handle a manuscript that you have seen elsewhere or was previously rejected...***

- (2) On occasion, THMS may receive a manuscript that a reviewer has previously reviewed for another journal and that has been rejected. In such situations, a THMS reviewer should feel comfortable in submitting the same recommendation and comments to THMS, provided the content of the manuscript for THMS is not substantially changed from the prior submission.
- (3) Related to Guideline #2, reviewers should be aware that the Editor-in-Chief or an AE may request a review of a manuscript that was previously rejected by THMS but with a request for resubmission. Such manuscripts typically contain a useful theoretical or empirical contribution but new data needs to be collected or new analyses conducted. In these cases, the Editor-in-Chief or the AE will likely ask the same reviewers to re-evaluate the resubmission. Maintaining a rejected manuscript as a resubmission can accelerate the re-evaluation process, if the same reviewers are used. Thus, a reviewer will be aware that the submission was previously rejected but should re-evaluate the work like a major revision.

***Provide a brief summary/overview of the manuscript and identify your focus...***

- (4) THMS strives to provide expert evaluation of the range of technical content in each manuscript with an appropriate set of reviewers. In some cases, a reviewer's expertise may be limited to a portion of the manuscript. With this in mind, it is expected that all reviews will include some form of summary of the research documented in a manuscript. The summary is intended to: (a) identify whether the reviewer considers the manuscript to fall within the scope of the journal; (b) support reviewer technical criticisms of the content of a study; and (c) provide a basis for the AE and/or authors to identify any potential misunderstanding of the research on the part of a reviewer.

***Identify the major issues you have with the research...***

- (5) In the event that a reviewer determines a manuscript merits further consideration for publication, reviews should clearly identify those items that are considered to be major issues for resolution prior to publication. THMS recommends reviewers develop a section of "Major Concerns" that includes the following information: (a) identification of the section of the manuscript in which the issue appears; (b) the gist of the information presented by the authors; (c) a statement of how the information deviates from existing knowledge, accepted practice, or logic; and (d) identification of the criticality of the issue and one to two suggestions on how the issue might be resolved.

***How to review mathematics...***

- (6) Reviews of manuscripts containing mathematical equations used for derivation of response measures, statistical analyses, etc. or proofs of new equations must include reviewer confirmation of the accuracy of equations or identification of any errors. It is incumbent upon authors to provide adequate explanation of the structure and components of mathematical equations and to describe, in text, the novelty of a new

mathematical function or model. However, if a reviewer does not feel comfortable in reviewing certain mathematical expressions, they should directly contact the AE handling the manuscript for reassignment of the work to another reviewer.

***Minimum requirements for empirical studies of new designs...***

- (7) Manuscripts submissions presenting empirical evaluations of new design approaches or prototypes should also identify the current state-of-the art for the target technology and, where applicable, demonstrate meaningful improvement in performance, safety, operator workload, etc. relative to current technology. If a surrogate to the state-of-the-art in the specific technology is developed for test purposes, the surrogate should be justified through capability identification or benchmarking. If such comparisons are absent from regular papers or technical correspondence with empirical components, reviewers should consider this situation as a basis for potential rejection.

***Identify minor issues with presentation and formatting of content...***

- (8) To further assist those authors whose manuscripts are considered to have merit for further consideration for publication, THMS also suggest that reviewers prepare a “Minor Issues” section as part of reviews. This section should identify any basic errors in presenting specific research methods, such as descriptions of formal experiment designs, randomization procedures, etc. Although not required, reviewers may also wish to identify in this section any English grammar issues they are able to find in a manuscript.

***Be sure to justify a rejection...***

- (9) In the event that a reviewer determines flaws in a manuscript are so critical that the work cannot be rectified for further consideration for publication, THMS recommends a thorough identification of all “Major Issues” along with an explanation of why the reviewer believes the issues cannot be resolved. (Major issues should be documented as described above in Guideline #3.) In regard to theoretical papers, examples of critical issues might include: (a) any unsubstantiated aspect of a theory leading to a logical flaw or deviation from existing accepted models; (b) failure to identify an approach for testing or validating the theory (i.e., is a lack of identification of any testable hypothesis as part of the submission). Some examples of critical issues in empirical studies might include: (a) errors in fact as a basis for research hypotheses; (b) confounds among independent variables; (c) unaccounted correlations among response measures; (d) errors in sample size determination leading to a lack of statistically reliable results; (e) erroneous use of statistical methods, such as ANOVAs with continuous predictors, regression models with discrete responses, contingency tables with continuous predictors and/or responses, etc.; and (f) misinterpretation of results as a basis for system design inferences. In some cases, issues with statistical methods and inference may be rectifiable; however, THMS also recommends that the manuscript review process is not an appropriate forum for additional training of researchers. In such cases, a reviewer should communicate to an AE gaps in the knowledge of authors that render

the submissions erroneous or pedestrian. The Journal can determine a rejection and provide authors with guidance on additional education/study as a basis for correcting errors in their work.

***Please be tactful and constructive in any criticism...***

- (10) In any and all cases of reviewer recommendation for rejection of a manuscript, provided the English language used in the manuscript is sufficient for comprehension of the study approach and meaning of results, reviewers are strongly encouraged to be tactful in delivering criticisms of research. Although there may be critical errors in a project, THMS recognizes the importance of respecting the level of effort demanded by the scientific method and an author's choice in selecting a journal for publication of research. In general, reviewers should first point-out any positive aspects of a study as well as those procedures to retain in future submissions of the work. This information should be followed by identification of items that need to be improved or changed. Critical flaws should be substantiated by references to the literature, if at all possible.

***Let the Editor-in-Chief know what you think in straight and plain language...***

- (11) Regardless of whether a manuscript is determined to have merit or critical flaws (preventing further consideration for publication), THMS suggests that all reviews provide confidential guidance to the AE with respect to rendering decisions. Such guidance should identify a reviewer's disposition on a manuscript in direct and certain terms. Although the Journal recommends tactful expressions of criticisms in reviews, the editor requires candid responses from reviewers to best assess the likelihood for success of a manuscript. Confidential comments to the editor should also further emphasize any critical issues identified by a reviewer that may prevent further consideration of a manuscript for publication.

***Signing reviews is discouraged (or how we maintain community)...***

- (12) THMS delivers a blind review process with the identities of all reviewers and AEs concealed from authors. The Journal believes this practice serves to preserve interpersonal relationships in the scientific community. Given the time and effort invested in research projects, authors are often sensitive to criticism of their work. Revealing the identity of THMS reviewers and AEs could lead to strained interactions in a "close knit" community, when such interactions might otherwise lead to scientific collaborations (as a result of reviewer awareness of other persons conducting research in their areas of interest). For these reasons, the Journal does not recommend signing of reviews.

## **Reviewer Recommendation Categories:**

### ***Suggesting a disposition on a manuscript...***

At present, THMS defines four recommendation categories, including “accept”, “reject”, “accept after minor revision”, and “revise and resubmit – major revision”. These categories are intended to convey to an AE the overall disposition of a reviewer regarding a manuscript submission after having carefully read and evaluated the work. The recommendation categories have a major influence on an AE’s recommendation to the Editor-in-Chief as well as the editor’s final decision on the manuscript and should, therefore, be seriously considered. With this in mind, the following are concise definitions of each disposition as an additional reference for reviewer recommendations to AEs:

- (1) “Accept” – As a reviewer, you have no further major or minor issues with the work and consider the manuscript acceptable for publication in its current form.
- (2) “Reject” – As a reviewer, you have identified critical flaws in the theory or scientific method as part of the study that render inferences or conclusions invalid. As such the work does not make a contribution to human-machine system science and should not be considered archival in nature.
- (3) “Accept After Minor Revision” – Whether you are providing a review of a first submission or a review of a revised manuscript, you have identified only minor issues, such as points of clarification on research procedure, or text, table or figure presentation or formatting issues. You have no major scientific concerns with the work and, if the authors resolve the minor issues, you consider the manuscript to be acceptable for publication.
- (4) “Revise and Resubmit – Major Revision” – This category should be recommended when a manuscript has “borderline” critical flaws in motivation, method or inference, which you think might be resolvable through major changes to the study or writing. Such changes might include a substantial revision of the literature review, data analysis or inference process. If you think a methodological change is needed, such as re-running an experiment or collecting additional data, which might require more than 6-9 months for an author to address, the “reject” category should be recommended instead.

For further review guidance or if you have specific questions on review preparation, reviewers should contact the THMS AE providing a review assignment or the Editor-in-Chief.

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