

# 1     SciTeX Writer: A Container-Based Framework for 2     Reproducible Scientific Manuscript Preparation

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## 7     Introduction

8         We thank the Editor and Reviewers for their thoughtful and constructive  
9         feedback on our manuscript describing the SciTeX Writer framework. Their  
10        comments have significantly strengthened both the technical content and the  
11        clarity of our presentation. We have carefully addressed each point raised  
12        during the review process and believe the revised manuscript provides a more  
13        comprehensive and accessible description of the framework's capabilities.

14        *Original comments from the editor and reviewers are presented in gray*  
15        *italicized text.*

16        Our responses to these comments are shown in blue text.

17        Changes made to the manuscript text are highlighted using latexdiff  
18        formatting, with additions shown in blue and ~~deletions shown in red with~~  
19        ~~striketrough~~.

20        This response document demonstrates one of the key features of Sci-  
21        TeX Writer: the structured organization of revision materials. Each re-  
22        viewer's comments and our corresponding responses are maintained in sepa-  
23        rate, version-controlled files that are automatically compiled into this com-  
24        prehensive response letter. The integration with latexdiff enables automatic

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25 generation of marked-up manuscripts showing precisely where changes were  
26 made. This systematic approach ensures that all reviewer concerns are ad-  
27 dressed and documented in a format that facilitates editorial review.

28 *Editor Comment 1*

29 *The manuscript presents an interesting framework for scientific manuscript*  
30 *preparation. However, the reviewers have raised several important points re-*  
31 *garding performance benchmarks, comparison with existing solutions, and*  
32 *accessibility for researchers without extensive technical backgrounds. Please*  
33 *address these concerns in your revision and provide additional validation data*  
34 *as suggested by the reviewers.*

35 *Response to Editor Comment 1*

36 We thank the Editor for this helpful summary. We have carefully ad-  
37 dressed all reviewer concerns through the following revisions:

38 1) Added comprehensive performance benchmarks in the Supplementary  
39 Results section, including compilation times across different system configu-  
40 rations and scalability analysis with varying document sizes.

41 2) Expanded the Discussion section to include detailed comparison with  
42 existing solutions (Overleaf, traditional LaTeX installations, and template  
43 repositories), clearly articulating the distinct advantages of our containerized  
44 approach.

45 3) Acknowledged the learning curve for command-line interfaces in the  
46 Limitations section and proposed future directions including optional graph-  
47 ical interfaces and expanded documentation for LaTeX newcomers.

48 4) Provided cross-platform validation results demonstrating byte-for-byte  
49 reproducibility across six different operating systems and two processor ar-  
50 chitectures.

51 These additions strengthen the manuscript by providing quantitative val-  
52 idation and addressing accessibility concerns while maintaining focus on the  
53 framework’s core contributions.

54 *Reviewer 1, Comment 1*

55 *The manuscript describes an interesting approach to scientific manuscript*  
56 *preparation using containerization. However, I am concerned about the com-*  
57 *putational overhead introduced by container startup times. The authors should*  
58 *provide detailed performance benchmarks comparing compilation times with*  
59 *and without containerization, across different document sizes and system con-*  
60 *figurations. Without this quantitative data, it is difficult to assess whether*  
61 *the reproducibility benefits outweigh the performance costs.*

62 *Response to Reviewer 1, Comment 1*

63 We thank the reviewer for this important point. We have added a com-  
64 prehensive “Compilation Performance Benchmarks” subsection to the Sup-  
65plementary Results that directly addresses this concern.

66 Our benchmarking revealed that container startup overhead adds approx-  
67 imately 2 seconds to each compilation cycle on our reference system (16 GB  
68 RAM, 8 cores). For a typical manuscript, total compilation time is 12 seconds  
69 for initial builds and 4 seconds for incremental builds. While this represents  
70 a measurable overhead compared to native LaTeX compilation, we argue  
71 that this cost is negligible in the context of typical writing workflows where  
72 authors compile documents infrequently (every few minutes at most).

73 More importantly, the reproducibility benefits become evident when con-  
74 sidering the time lost to debugging environment-specific compilation failures  
75 in collaborative settings. Our own experience and informal surveys of col-  
76 leagues suggest that researchers commonly spend 30-60 minutes resolving  
77 package version conflicts when collaborating across different systems. The 2-  
78 second container overhead is trivial compared to these multi-hour debugging  
79 sessions.

80 We have added this cost-benefit analysis to the Discussion section to  
81 help readers understand that while containerization introduces measurable  
82 overhead, the reproducibility benefits provide substantial time savings in  
83 collaborative workflows. We appreciate the reviewer prompting us to make  
84 this trade-off explicit.

85 The container-based compilation system represents a significant departure  
86 from traditional LaTeX workflows and offers substantial practical benefits.  
87 By encapsulating the entire compilation environment, the framework  
88 eliminates the common scenario where manuscripts compile successfully on  
89 one author’s machine but fail on collaborators’ systems due to package version  
90 differences.

91 Our benchmarking revealed that container startup overhead adds approximately  
92 2 seconds to each compilation cycle on our reference system (16 GB RAM,  
93 8 cores). For a typical manuscript, total compilation time is 12 seconds for  
94 initial builds and 4 seconds for incremental builds. While this represents  
95 a measurable overhead compared to native LaTeX compilation, this cost is  
96 negligible in the context of typical writing workflows where authors compile  
97 documents infrequently.

98 More importantly, the reproducibility benefits become evident when considering  
99 the time lost to debugging environment-specific compilation failures. The  
100 2-second container overhead is trivial compared to the 30-60 minutes researchers  
101 commonly spend resolving package version conflicts when collaborating across  
102 different systems.

103 This reproducibility becomes increasingly important as research teams  
104 become more distributed and as long-term document maintenance requires  
105 compilation environments to remain stable over years.

106 *Reviewer 2, Comment 1*

107 *The manuscript would benefit from a more thorough comparison with*  
108 *Overleaf, which already provides reproducible LaTeX compilation environments.*  
109 *The authors mention Overleaf briefly but do not clearly articulate*  
110 *what advantages their containerized approach offers over this established cloud-*  
111 *based platform. Additionally, the manuscript does not address accessibility*  
112 *for researchers who may not be comfortable with command-line interfaces and*  
113 *containerization technologies. This could limit adoption of the framework.*

114 *Response to Reviewer 2, Comment 1*

115 We appreciate these thoughtful observations. We have substantially ex-  
116 panded the “Comparison with Existing Solutions” subsection in the Discus-  
117 sion to provide a more detailed analysis of how SciTeX Writer differs from  
118 Overleaf.

119 The key distinctions are: (1) SciTeX Writer operates entirely on local sys-  
120 tems or institutional computing infrastructure, eliminating dependency on in-  
121 ternet connectivity and addressing concerns about sensitive research data on  
122 cloud platforms; (2) the framework provides complete control over the com-  
123 pilation environment through transparent, modifiable container definitions  
124 rather than a proprietary compilation service; (3) the modular file structure  
125 and automated asset management go beyond what Overleaf provides, ac-  
126 tively preventing merge conflicts and automating figure/table preprocessing;  
127 and (4) the system integrates seamlessly with existing Git workflows and  
128 institutional HPC resources that often prohibit cloud services.

129 Regarding accessibility, we acknowledge this is a valid limitation. We  
130 have added discussion of this concern in the “Limitations and Consider-  
131 ations” subsection, explicitly noting that the command-line interface may  
132 present a learning curve for some researchers. We have also proposed future  
133 development directions including optional graphical interfaces and expanded  
134 documentation for LaTeX newcomers. However, we note that our target  
135 audience includes researchers already using or willing to learn Git for ver-  
136 sion control, a group that increasingly represents the norm in computational  
137 research fields.

138 We have also clarified in the Introduction that SciTeX Writer is positioned  
139 as a complementary tool rather than a universal replacement for existing  
140 solutions. Different research workflows have different requirements, and we  
141 now better articulate the specific use cases where our framework provides the  
142 greatest value.

143 Compared to cloud-based platforms like Overleaf, SciTeX Writer offers  
144 greater control over the compilation environment and eliminates dependency

145 on internet connectivity, which can be crucial for researchers working in  
146 bandwidth-limited environments or on sensitive projects requiring air-gapped  
147 systems. Unlike simple template repositories, the framework provides active  
148 workflow automation through Makefiles and preprocessing scripts rather than  
149 merely offering formatting guidelines. The system complements rather than  
150 replaces Git-based workflows, adding a layer of manuscript-specific tooling  
151 while maintaining compatibility with standard version control practices.

152     The key distinctions from Overleaf are: (1) SciTeX Writer operates entirely  
153 on local systems or institutional computing infrastructure, addressing concerns  
154 about sensitive research data on cloud platforms; (2) the framework provides  
155 complete control over the compilation environment through transparent,  
156 modifiable container definitions rather than a proprietary compilation service;  
157 (3) the modular file structure and automated asset management go beyond  
158 what Overleaf provides, actively preventing merge conflicts and automating  
159 figure/table preprocessing; and (4) the system integrates seamlessly with  
160 existing Git workflows and institutional HPC resources that often prohibit  
161 cloud services.

162     Where other solutions address individual aspects of the manuscript prepa-  
163 ration challenge, SciTeX Writer integrates multiple components into a unified  
164 system.

165     The framework requires users to have basic familiarity with command-line  
166 interfaces and Makefiles, which may present a learning curve for researchers  
167 accustomed to graphical editing environments. ~~While the system automates~~  
168 ~~many aspects of document preparation, it remains a LaTeX-based solution~~  
169 ~~and therefore inherits both the power and complexity of the underlying~~  
170 ~~typesetting system.~~ The containerization approach requires Docker or Singularity  
171 installation, adding a dependency that, while increasingly common in research  
172 computing environments, may not be universally available. The framework is  
173 optimized for scientific articles following conventional IMRAD structure and  
174 may require adaptation for other document types such as books or technical  
175 reports. Future development could address these limitations through optional

graphical interfaces, expanded documentation for LaTeX newcomers, and  
templates adapted for diverse document formats.

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## Conclusion

We sincerely appreciate the time and expertise that the Editor and Reviewers devoted to evaluating our manuscript. Their insightful comments have led to substantial improvements in both the technical documentation and the clarity of our presentation. The revision process has strengthened the manuscript's contribution by prompting us to provide additional validation results, clarify implementation details, and better articulate the framework's advantages for collaborative scientific writing.

All concerns raised during the initial review have been addressed through revisions to the manuscript text, addition of supplementary materials, and clarification of technical specifications. We believe the revised manuscript now provides researchers with a clear understanding of how SciTeX Writer can streamline their manuscript preparation workflow while ensuring reproducibility across diverse computing environments.

Appropriately, this revision letter itself was generated using the SciTeX Writer framework, demonstrating the system's practical utility for managing the peer review process. The structured organization of reviewer comments and author responses, combined with automatic generation of marked-up manuscripts, exemplifies the workflow efficiencies that the framework provides.

We look forward to your decision on the revised manuscript and remain available to address any additional questions or concerns.

Sincerely,

The SciTeX Writer Development Team