

SciTeX Writer: Modular Framework for Version-Controlled Manuscripts, Supplementary Materials, and Peer Review Responses

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9 Introduction

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

16 Original comments from the editor and reviewers are presented in gray
17 italicized text.

¹⁸ Our responses to these comments are shown in blue text.

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

22 This response document demonstrates one of the key features of Sci-
23 TeX Writer: the structured organization of revision materials. Each re-
24 viewer's comments and our corresponding responses are maintained in sepa-

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25 rate, version-controlled files that are automatically compiled into this comprehensive response letter. The integration with latexdiff enables automatic generation of marked-up manuscripts showing precisely where changes were made. This systematic approach ensures that all reviewer concerns are addressed and documented in a format that facilitates editorial review.

30 *Editor Comment 1*

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

37 *Response to Editor Comment 1*

38 We thank the Editor for this helpful summary. We have carefully addressed all reviewer concerns through the following revisions:

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

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

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

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

53 These additions strengthen the manuscript by providing quantitative validation and addressing accessibility concerns while maintaining focus on the

55 framework’s core contributions.

56 *Reviewer 1, Comment 1*

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

64 *Response to Reviewer 1, Comment 1*

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

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

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

82 We have added this cost-benefit analysis to the Discussion section to
83 help readers understand that while containerization introduces measurable
84 overhead, the reproducibility benefits provide substantial time savings in

85 collaborative workflows. We appreciate the reviewer prompting us to make
86 this trade-off explicit.

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

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

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

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

108 *Reviewer 2, Comment 1*

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

116 *Response to Reviewer 2, Comment 1*

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

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

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

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

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

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

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

164 Where other solutions address individual aspects of the manuscript prepara-
165 tion challenge, SciTeX Writer integrates multiple components into a unified
166 system.

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

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

180

181 **Conclusion**

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

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

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

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

203 Sincerely,
204 The SciTeX Writer Development Team