

[ICITconf'2024] Review for paper #1571017845 completed

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Mon 6/3/2024 4:07 PM

To: Le Van Hung <levanhung@humg.edu.vn>

Dear Dr. Hung Le,

Thank you for completing the review of the paper #1571017845 ("Scaling Up Image-To-LaTeX Performance: Sumen an End-To-End Transformer Model with Large Dataset") for ICITconf'2024. Below is a copy of your review.

You can modify the report by going to <https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fedas.info%2FR.php%3Fr%3D12738672&data=05%7C02%7Clevanhung%40humg.edu.vn%7C9cd389ac1a0042c365b108dc83ac8863%7Cc852d62b30324cdc96ab30e4368fabd7%7C0%7C0%7C638530024284214933%7CUnknown%7CTWFpbGZsb3d8eyJWljoIMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTil6lk1haWwiLCJXVCi6Mn0%3D%7C0%7C%7C%7C&sdata=dkqv0VN5othjQA2sDehTarjU9Re68IPaq4A0Q5a8mlU%3D&reserved=0> up to the due date of Jun 1.

Best regards,

The conference chairs

> *** Novelty and originality: Rate the novelty and originality of the ideas or results presented in the paper.

Significant original work and novel results. (4)

> *** Technical content and scientific rigour: Rate the technical content of the paper (e.g.: completeness of the analysis or simulation study, thoroughness of the treatise, accuracy of the models, etc.), its soundness and scientific rigour.

Solid work of notable importance. (4)

> *** Quality of presentation: Rate the paper organization, the clearness of text and figures, the completeness and accuracy of references.

Well written. (4)

> *** Relevance and timeliness: Rate the importance and timeliness of the topic addressed in the paper within its area of research.

Excellent (5)

> *** Strong aspects: Comments to the author: what are the strong aspects of the paper

The paper introduces the novel Sumen model, a Transformer-based encoder-decoder capable of handling both printed and handwritten mathematical expressions, and utilizes a large-scale dataset with 3.4 million image-text pairs to enhance robustness and generalization. The integration of Swin Transformer for effective image processing and the use of KaTeX parser for normalizing LaTeX strings showcase technical innovation. Comprehensive evaluation on benchmarks like Im2latex-100k and

CROHME, along with detailed experimental setup, demonstrates the model's superior performance. The release of source code and model checkpoints facilitates community use, and the clear, well-organized presentation aids understanding.

> *** Weak aspects: Comments to the author: what are the weak aspects of the paper?

The paper lacks a thorough analysis of computational efficiency, including training time, memory usage, and inference speed, which are critical for practical applications. The dataset used, while large, is imbalanced between printed and handwritten mathematical expressions, potentially affecting the model's performance on handwritten data. The evaluation is mainly based on benchmark datasets, with limited discussion on real-world scenarios such as varying image qualities and different handwriting styles. Additionally, the paper does not provide a detailed error analysis or qualitative assessment of the model's failures, which could offer insights for improvement.

> *** Recommended changes: Recommended changes. Please indicate any changes that should be made to the paper if accepted.

Include a detailed analysis of computational efficiency, such as training time, memory usage, and inference speed, to enhance understanding of the model's practicality. Expand the evaluation to include real-world scenarios with varying image qualities and different handwriting styles to demonstrate robustness. Provide a detailed error analysis and qualitative assessment of model failures to offer insights for improvement. Lastly, provide more detailed comparisons with existing methods to highlight specific improvements and innovations introduced by the Sumen model.

> *** Comments to the TPC: Confidential comments to the TPC (will be not sent to Authors)

> *** Submission Policy: Does the paper list the same author(s), title and abstract (minor wording differences in the abstract are ok) in its PDF file and EDAS registration?

Yes

> *** Overall Recommendation: Overall Recommendation
Accepted (1)