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COVER LETTER

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[*27 July 2023*]

Dear,
I/We wish to submit an original research article entitled "[***A Simplified Dental Caries Segmentation using Half U-Net for Teledentistry System***]" for consideration by SINERGI.

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. We promise not to withdraw this article after it has been processed by the Editorial Team. If there is a withdrawal, we are willing to pay a penalty of USD 150 (IDR 2000K) to the SINERGI Editorial Team.

In this paper, I/we report on / show that:

Field	:	Biomedics, Computer Science, Engineering
Topic	:	Biomedics
Brief Background	:	A high-reliability diagnostic equipment efficiently supported by using computer-based diagnostics system. For instance, a computational approach to established a model which able to diagnose the diseases. Artificial intelligence has been applied to aid in the field of medical imaging. Classification, prediction, and localization of lesions or dental caries greatly minimize the load and difficulties for clinical practitioners
Research Problem	:	U-Net is a widely used architecture in medical image segmentation, employing skip connections to combine high-level semantic features from the decoder with detailed features from the encoder. Despite the misconception that its success is solely based on the U-shape, various U-Net-based models have been developed, where the encoder downsamples the input matrix and increases feature maps, and the decoder upsamples it while reducing feature maps for pixel-wise segmentation comparison. However, it should be noted that the U-Net architecture is complex to train and requires a substantial amount of time for execution.

Overview of Method	:	The Half-UNet structural model surpasses the U-shaped model in efficiency and segmentation ability due to its linear processes like bilinear upsampling and addition, which create no additional parameters or computations. The use of batch normalization after convolution and before ReLU reduces computation while acting as a regularizer to prevent overfitting, making it a cost-effective solution for concatenating feature maps.
Significant finding	:	This simplification of U-Net architectures is utilized for segmented dental caries images. This paper proposed a simplified the UNet decoder layers into the level of blocks Half-UNet (X_{De}^{4}) and Half-UNet (X_{De}^{3}).

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

Sincerely,
Zendi Iklima



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AUTHORSHIP STATEMENT

I/We wish to submit an original research article entitled "[***A Simplified Dental Caries Segmentation using Half U-Net for Teledentistry System***]" for consideration by SINERGI.

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

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POTENTIAL REVIEWERS

Please submit 3 (three) potential reviewers (*that have not listed in SINERGI*) to speed up the review process that competent for the topic and has a good reputation in that area.

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