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In Response to: YOLOv11 Model for PCOS Diagnosis: A Significant Contribution with Clinical Insights

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We thank the author for recognizing our research. We appreciate the opportunity to engage in scholarly dialogue regarding the questions and suggestions raised by the author.

First, we would like to emphasize that our inclusion and exclusion criteria reflect the thoroughness of sample processing in our study.[1] We established five exclusion criteria and strictly applied each requirement when excluding patients. Among the 46.7% of excluded patients, not all were excluded due to low image quality. Therefore, nearly half of the patients were not deliberately excluded simply to select high-quality images. To ensure methodological rigor and strengthen the persuasiveness of the research results, we applied the inclusion and exclusion criteria strictly. Therefore, we do not believe that the most challenging cases for ultrasound diagnosis were excluded from this study. Additionally, our study specifically focuses on patients with suspected polycystic ovary syndrome (PCOS) in clinical practice, rather than merely distinguishing between ovaries with PCOS and normal ovaries. Currently, most artificial intelligence (AI) research on PCOS focuses on distinguishing between PCOS ovaries and normal ovaries. However, for both ultrasonographers and AI technology, this distinction is not particularly challenging. In clinical practice, the real challenge lies in the differential diagnosis of conditions that are easily confused with PCOS. Our study specifically seeks to address this issue.

Second, as we elaborated in the "introduction"[1], regarding current issues in AI research on PCOS, some studies[2-4] have relied on ultrasound images from public databases, including incorrect images with substantial deviations in image acquisition standards, instrument parameters, and ultrasound transducers. Therefore, the persuasiveness of such studies should be carefully evaluated, even if they demonstrate advanced research results. We observed this issue during our preliminary literature review, particularly in studies conducted by scholars from pure engineering backgrounds, and we speculate that their work may lack rigorous scrutiny from the medical profession. Indeed, this reflects a common challenge in interdisciplinary research at the interface of medicine and engineering. Therefore, the accuracy and reliability of such research results are more likely to be questioned. Reasonable academic exchanges are valuable for advancing interdisciplinary studies. We also acknowledge that our research has certain limitations in its presentation and structure. To clarify, we used the "YOLOv11-n" model. The model was trained with a batch size of 16, with the maximum number of training epochs set to 300. Early stopping was applied with a patience of 100 (Figure 1). For Android devices, the application requires a processor at least as powerful as the Qualcomm Snapdragon 780G or the MediaTek G99. For a Windows device, the application requires a processor with performance equivalent to or greater than an Intel Core i3-10300. Some technical details are provided in the "code availability" section of our article.

Finally, PCOS has been a challenging clinical problem in gynecology and endocrinology since its introduction in 1935. The complexity and heterogeneity of the disease, in terms of regional ethnicity and clinical manifestations, have prompted authoritative input from numerous medical experts worldwide. Consequently, the diagnosis and treatment guidelines for PCOS are continuously evolving. Therefore, we believe that fully advancing research on this disease remains difficult under the conditions of medical knowledge and AI technology, as well as developing a model applicable to patients across different regions worldwide. We would like to express our gratitude to the author for the valuable suggestion. Integrating more comprehensive clinical and imaging data on PCOS, establishing more powerful and universal AI diagnostic models, and conducting research across populations with broader age coverage are indeed important directions that need to be advanced in our medical field. With the advancement of medicine and AI, we hope to conduct more extensive and higher-quality research in the future. Our study represents an initial attempt to take a small step under the existing conditions. We place great importance on this careful and appropriate step, as it provides a meaningful foundation for potentially greater advances in the future.

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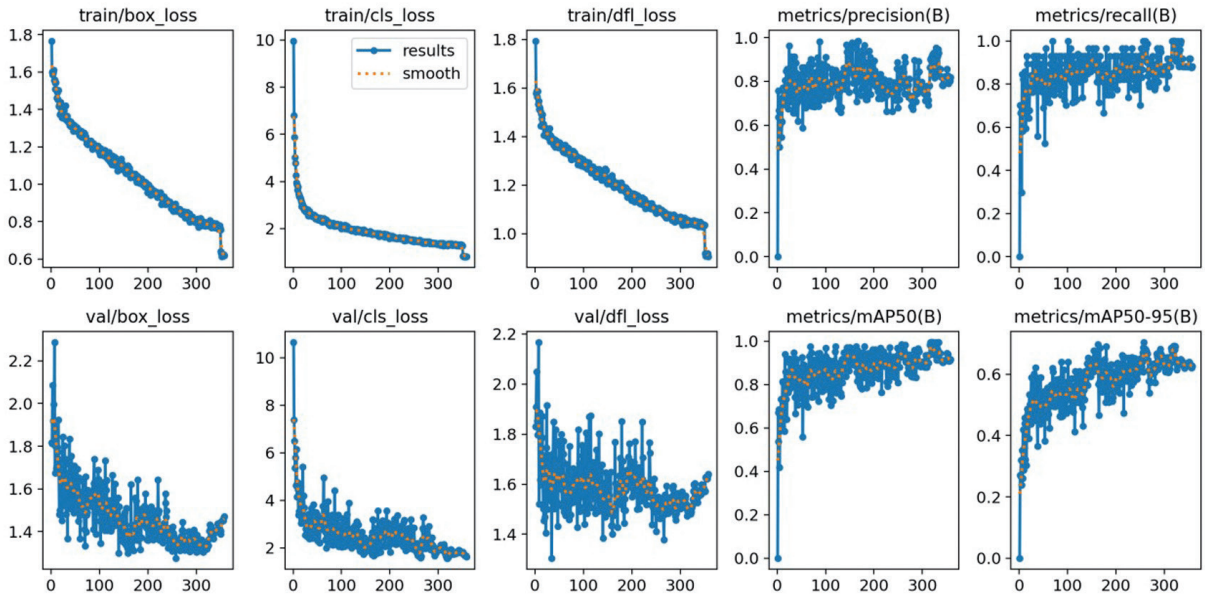

FIG. 1. The loss and precision curves during the training process.

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