

Reliable Soup: Reliable-Driven Model Weight Fusion on Ultrasound Imaging Classification

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Abstract : It remains challenging to measure reliability from classification results from different machine learning models. This paper proposes a reliable soup optimization algorithm based on the model weight fusion algorithm Model Soup, aiming to improve reliability by using dual-channel reliability as the objective function to fuse a series of weights in the breast ultrasound classification models. Experimental results on breast ultrasound clinical datasets demonstrate that reliable soup significantly enhances the reliability of breast ultrasound image classification tasks. The effectiveness of the proposed approach was verified via multicenter trials. The results from five centers indicate that the reliability optimization algorithm can enhance the reliability of the breast ultrasound image classification model and exhibit low multicenter correlation.

Keywords : breast ultrasound image classification, feature attribution, reliability assessment, reliability optimization

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