Supplemental Material 1. Standalone artificial intelligence (AI) detection performance.

1. Standalone AI Detection Sensitivity

For malignant ultrasonography (US) images within the test data, a lesion was considered successfully detected if the distance between the center point of the suspected AI = detected lesion and the reference standard, divided by the maximum width passing through the center point of the reference lesion, was ≤ 0.5 (refer to Supplementary Fig. 1). The detection sensitivity was calculated for 500 malignant cases. Of these, the AI successfully detected lesions in 479 images, yielding a detection sensitivity of 0.96 (95% confidence interval [CI], 0.937 to 0.974).

2. Standalone AI Detection Specificity

For non-malignant (benign or normal) breast images, a detection result was considered successful (correct rejection) if no lesion is detected by the AI. The detection specificity was calculated by testing the detection status of 500 non-malignant breast images. Of these, 382 were correctly classified as lesion-free, resulting in a detection specificity of 0.76 (95% CI, 0.724 to 0.801).

3. Standalone AI Real-time Detection Time

The real-time detection performance was measured as the central processing unit (CPU) time from the input of a single US image to the output of the AI heatmap, using a computer with a 2.3 GHz CPU and ≤ 16 GB of main memory. The average detection time per US image was calculated for the entire dataset was 0.02 seconds, well within the 0.05-second threshold for real-time performance.