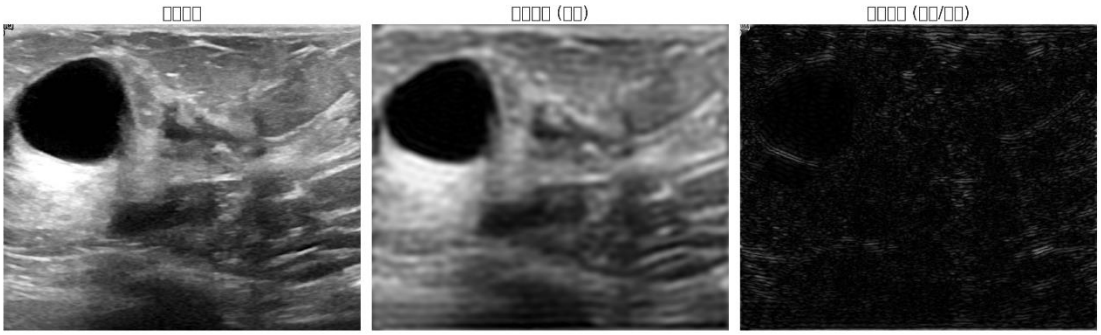

Qualitative Analysis of Frequency Decomposition.

Figure illustrates an example of frequency decomposition on a breast ultrasound image, including the original image, the reconstructed low-frequency component, and the high-frequency component. The low-frequency representation preserves the global tissue structure and overall lesion morphology, while suppressing speckle noise and fine texture variations. In contrast, the high-frequency component emphasizes boundary information and local textural details, particularly around lesion margins, while largely discarding homogeneous background regions. This complementary behavior indicates that low-frequency features are effective for capturing global anatomical context, whereas high-frequency features provide boundary-sensitive cues critical for lesion delineation. Such observations support the design of FreqTrans, which explicitly decomposes and adaptively fuses frequency components to jointly leverage global context and fine-grained details in noisy, low-contrast ultrasound images.