-Supplementary materials-

**Ki-GAN: Knowledge Infusion Generative Adversarial Network for Photoacoustic Image Reconstruction in vivo**

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![Diagram](image)

**Fig. S1.** Adapted Auto-Encoder for Signal Processing Knowledge. Dotted area $z'$ is the input of the convolutional layer, and the convolutional layer converts $z'$ to the latent feature $\hat{z}$; green blocks indicate the signal’s features; blue blocks indicate the image’s features.
Fig. S2. Overview of our Discriminator. Note that we use convolutional kernel with $4 \times 4$ size, the receptive fields of output can still cover the entire input image.

Fig. S3. The performances of different hyper-parameters values. For all results, the $\lambda_{pix} = 1$. 

\[ L_{adv} \]
Fig. S4. More examples of quantitative comparison using full-sampled data. Different row indicates different sample; from left to right: ground-truth, delay-and-sum, U-Net and Ki-GAN.
Fig. S5. Examples of ablation studies. Different column indicates different sample: from top to bottom: ground-truth, U-Net$^1$: input the signals and resize to concatenation, AE#1: Auto-Encoder, AE#2: AE#1 with PSSIK, AE#3: AE#2 with Image Feature Supervision, AE#4: AE#3 with Embedded Certified Knowledge, Ki-GAN.
Fig. S6. More examples of quantitative comparison using sparse-sampled data. Different row indicates different sample; from left to right: ground-truth, delay-and-sum, U-Net and Ki-GAN.