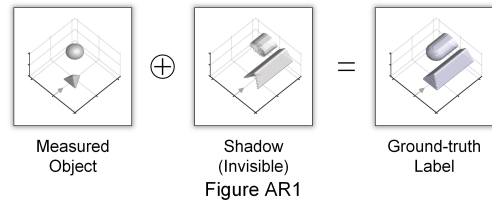


1 We appreciate your time and valuable comments. We have carefully responded to all the reviewers' comments.

2 <Reviewer 2> Q1. The impact on evaluation score when misclassifying  
 3 invisible voxels - A1. As described in section 4.2, shaded regions  
 4 (voxels that are not visible) are padded by one (as shown in Fig. AR1).  
 5 Therefore, the invisible voxels do not affect the performance of the  
 6 Bat-G network.



7 Q2. Grammatical mistake (e.g. vertexes) and Fig.1 appear before the  
 8 abstract - A2. We will correct “vertexes” to “vertices” and move Fig.  
 9 1 to the second page. In addition, we will check other grammatical errors and fix them.

10 Q3. Hard to fully understand the SAE network without seeing the supplementary material - A4. In the final manuscript,  
 11 we will gladly include the specific details of the SAE (from the supplementary material) and the reason why we have  
 12 chosen the SAE as a baseline (from Q1 – Reviewer 4) in the main manuscript.

13 <Reviewer 3> Q1. Comparison between 3D US imaging in medicine and the proposed system - A1. The fundamental  
 14 differences in principle and implementation are depicted in Fig. AR2 due to the page limit.

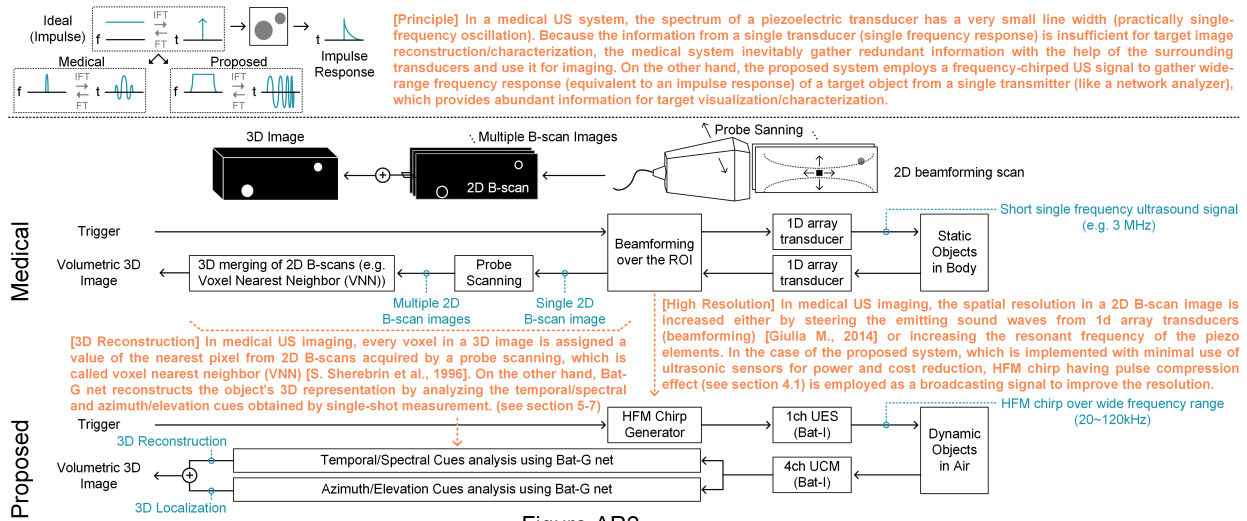


Figure AR2

15 Q2. Compressing Sections 1-3 and adding more details to Sections 5-7 - A2. We will reorganize the contents of each  
 16 section to add more details on the design strategies of the Bat-G net and analysis/discussion of the experimental results.

17 <Reviewer 4> Q1. Why SAE was chosen as the baseline - A1. The current state-of-the-art image reconstruction method  
 18 using a neural network [Bo Zhu et al., 2018] demonstrates that the architecture composed of SAE and fully-connected  
 19 (FC) layers can effectively learn forward reconstruction method composed of two manifold transformations: (a)  
 20 diffeomorphism between sensory input and latent space in low dimension and (b) manifold mapping from latent space  
 21 to the output image. Therefore, such SAE (with a FC layer) structure is selected as the baseline, while maintaining the  
 22 number of parameters and layers equal to that of Bat-G network for a fair comparison. In the final manuscript, we will  
 23 add the description of the reason why we have chosen the SAE structure as the baseline.

24 Q2. It would have been a more compelling argument if the performance of Bat-G was reported with the biomimetic  
 25 connection removed - A2. Biomimetic connection emulating a bat's auditory pathways includes monaural/binaural  
 26 path and direct connection to deeper layers (>2). When the biomimetic connections are removed from the Bat-G  
 27 network as shown in Fig. AR3, the ablated output eventually becomes identical to the SAE. As a result, comparing the  
 28 reconstruction performance of the Bat-G net with that of SAE is equivalent to validating the efficacy of biomimetic  
 29 connections of the Bat-G net.

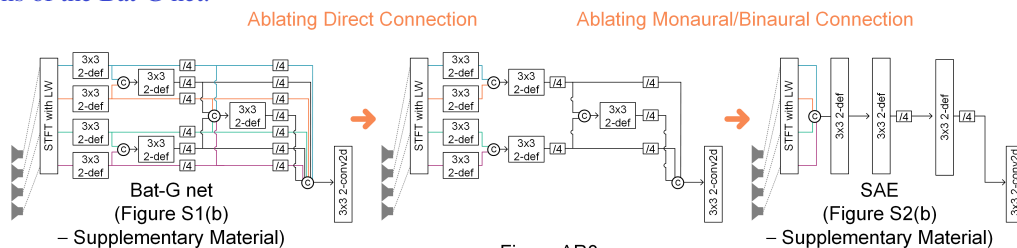


Figure AR3