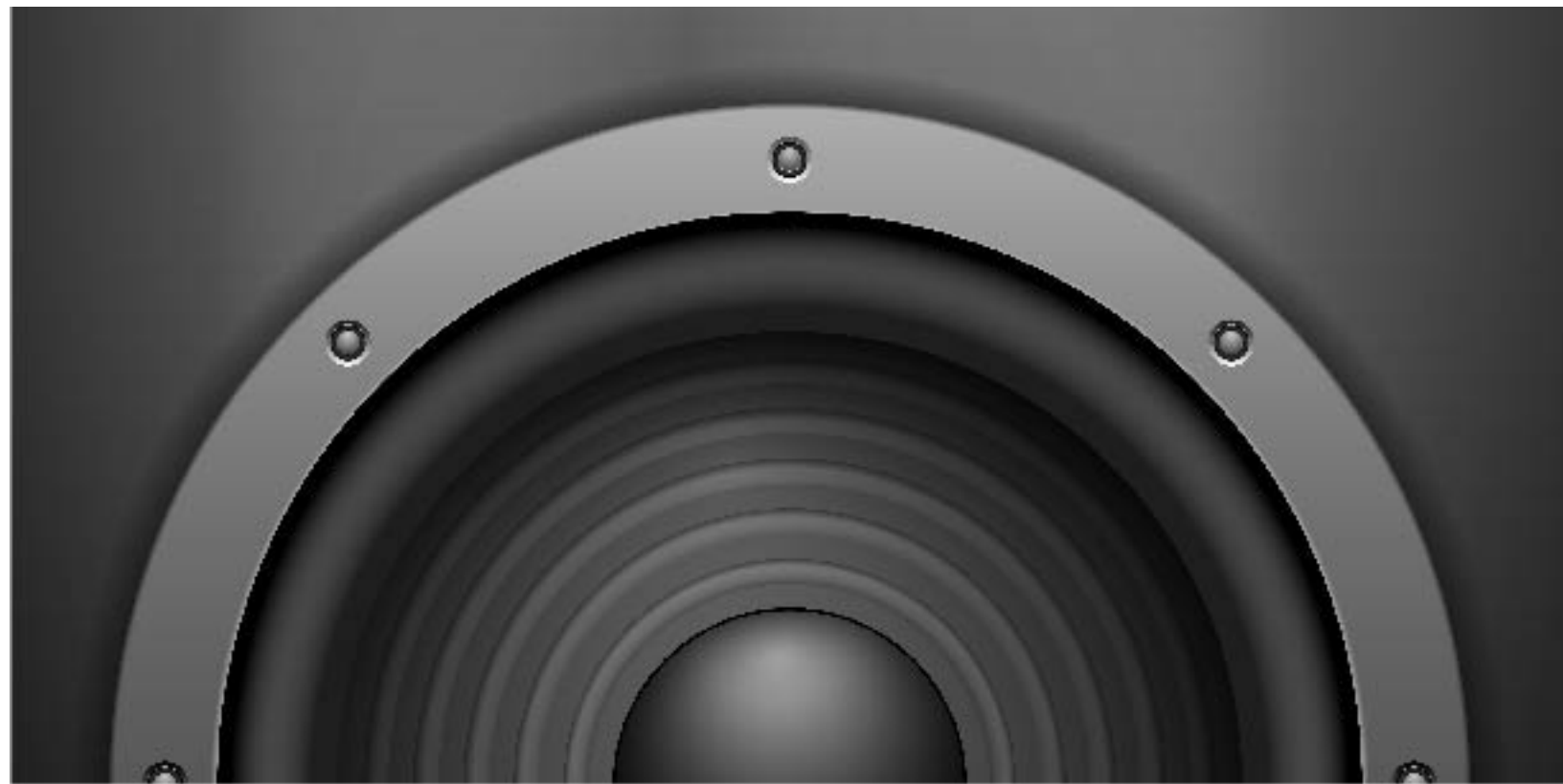


How subVo klaraT improves “Barge In” performance

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1. INTRODUCTION

[Introduction to Smart Speakers and Voice Assistants]

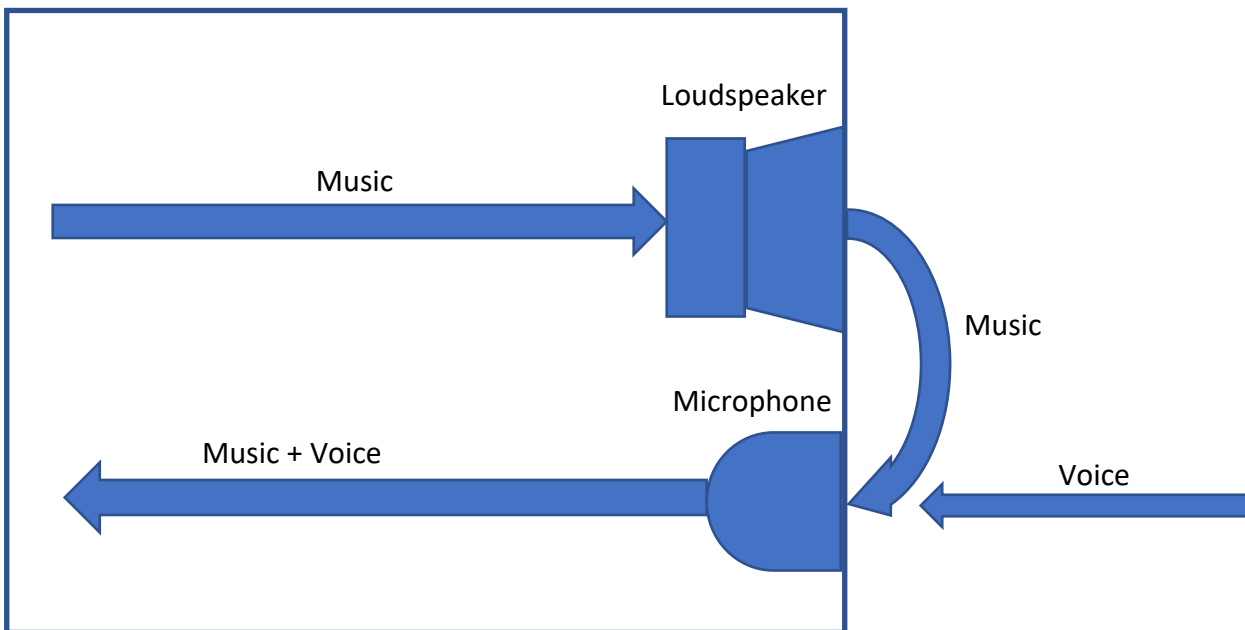
Loudspeakers do their best to reproduce audio signals but fall short due to many physical constraints and forces acting upon them. If real-time monitoring of the loudspeaker's diaphragm could be known, many of the limitations of the loudspeaker can be reduced or even eliminated.

“Barge In” is the name of the algorithm that allows understanding of voice commands on the smart speaker when it is currently playing music.



2. BASIC SMART SPEAKER BLOCK DIAGRAM

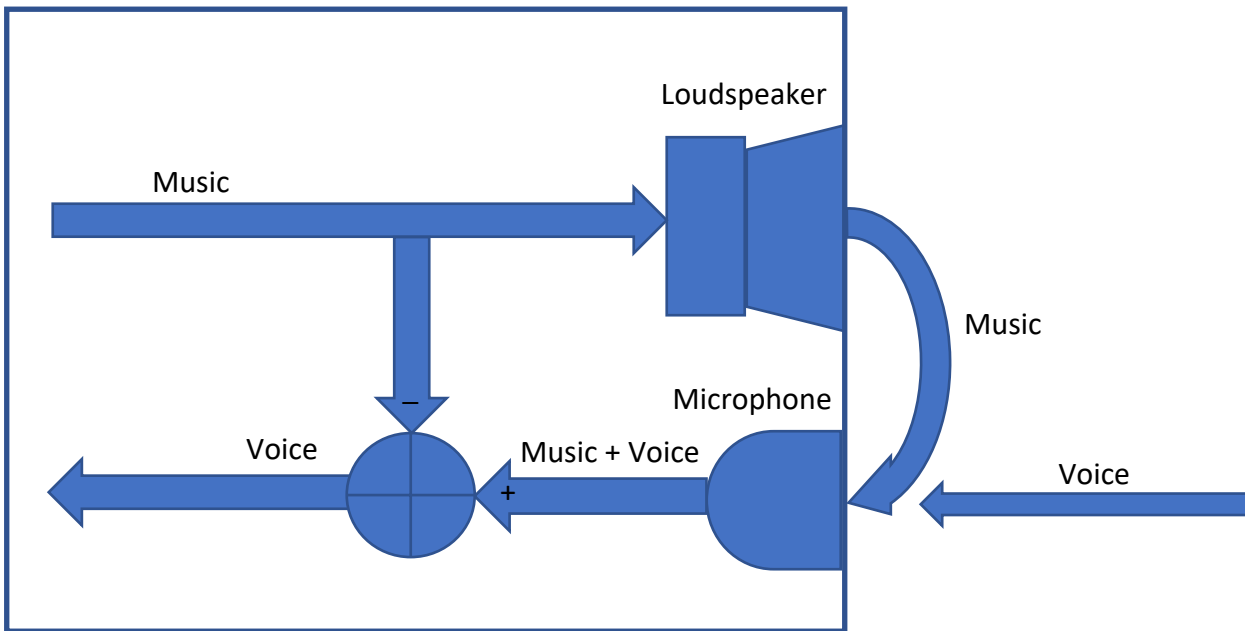
In a basic Smart Speaker system, voice commands are difficult to understand when music is playing. This is because the microphone picks up both the music and the voice. Typically, the loudspeaker is closer to the mic than the voice source. The music signal overpowers the voice signal, impeding the ability to understand the voice command.





3. "BARGE IN" BLOCK DIAGRAM

A Typical Barge In algorithm uses a DSP to subtract or cancel out the music so only voice is captured.

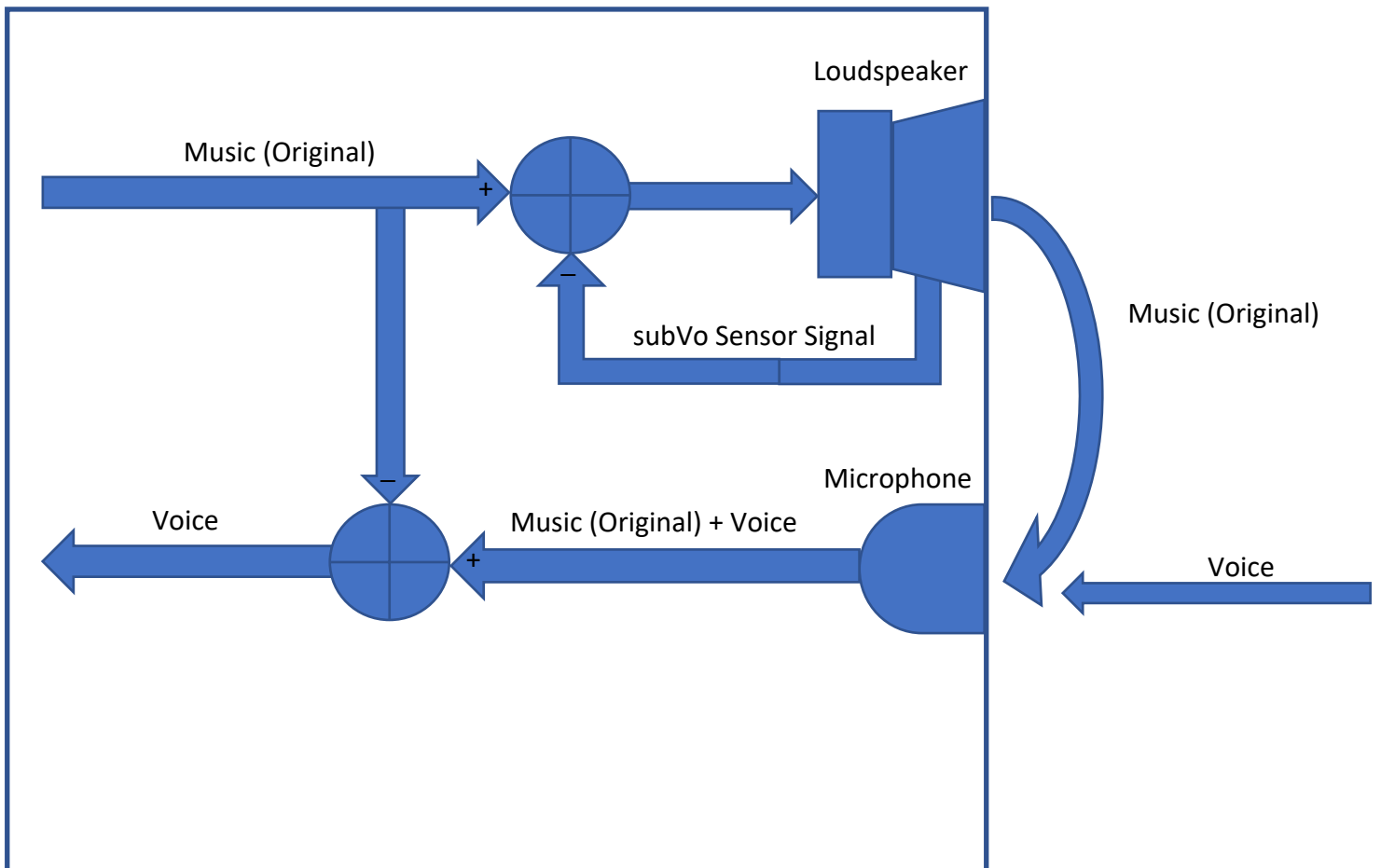


This method works only if the music captured by the microphone perfectly matches the music delivered to the loudspeaker. In reality, the loudspeaker does a poor job of reproducing the music thus creating a modified music signal. Because of this, the cancellation of the music is poor.



METHOD 2

Method 2 uses the subVo sensor in a feedback loop around the loudspeaker to force the loudspeaker to produce the original music so cancellation can occur as expected.





SUMMARY

Using the subVo diaphragm tracking sensor system, Barge In performance can be dramatically improved. The subVo sensor can also greatly improve performance and reduce cost of an audio system. Knowing and operating at the limits of the diaphragm allow the system to produce maximum loudness without damaging or distorting the loudspeaker. This improves sound quality and voice intelligibility. With self-calibration, expensive production time measurements can be eliminated and loudspeaker performance can be maintained as the loudspeaker ages and degrades. Please visit www.subVo.com for more information on how to begin integrating the subVo sensor solution into your products.