Comparison of Dual-beamforming Algorithms on Nearfield Locational Audio Signals

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Objectives

• Implement two different locational focusing algorithms
• Determine which of the two algorithms is better at isolating an audio signal from nearby interfering signals
• Implement the algorithm that is better at isolating a signal in a real-time system
Beamforming

- “Steers” an array of sensors in a particular direction
- Uses time delay between sensors to determine direction of arrival
- More flexible and often smaller than spatial aperture
Sinc Interpolation Approach

• Use curvature of audio wave fronts
• Delay signals at each microphones using interpolation
• Use a truncated sinc function to interpolate
Simulation Comparisons

- Dual-beamformer
- Sinc Interpolator Approach
Implementation Results

• Only dual-beam implementation currently
• 3 audio sources
• Energy graph shows where audio energy is concentrated
• Listening to audio signals shows some separation
Next Steps

• Implement the sinc interpolation algorithm
• Determine which algorithm works better at separating audio signals
• Implement the better algorithm in a real-time system
References