

ECE445 – Project Pitch

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- LED Globe POV display
- Ultrasonic ‘directional speaker’ puzzle
- “What a ____ looks like”

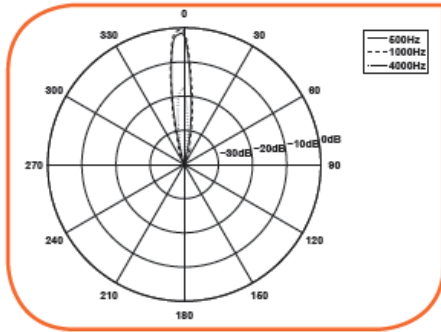
LED Globe POV Display



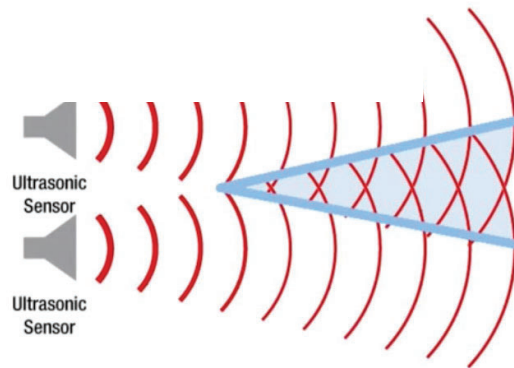
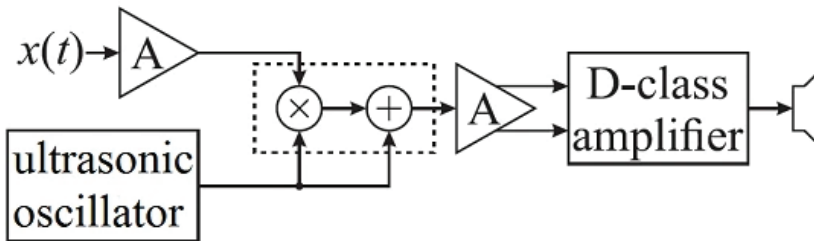
- Rapidly spinning LEDs + persistence of vision
= cool display
- Problems
 - Didn't work
 - Chips don't match schematic
 - Can only display fixed pre-stored image, or clock
- What I need
 - Functional, robust operation
 - Can update the text in real time
 - Countdown timer, incrementable

ECE445 project in Fall 2025 as starting point!

Ultrasonic “Directional” Speaker

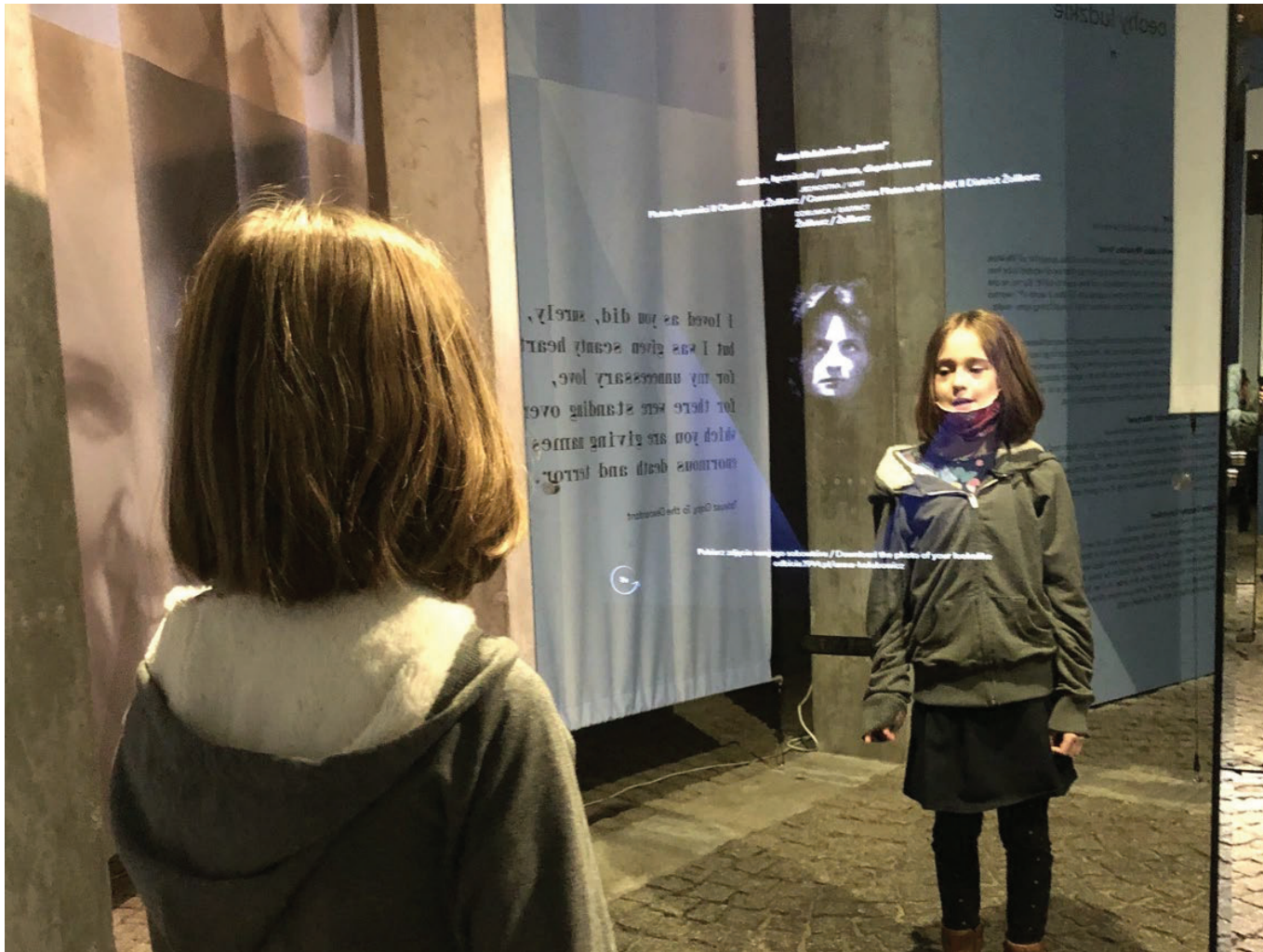


- Long audio wavelengths diffract
- Short ultrasonic wavelengths don't
- Solution: combine two ultrasonic signals: $f(t) + [f(t) + \delta f(t)]$
- Ears hear the beat note at $\delta f(t)$
- Used, e.g., for museum exhibits



- Puzzle: can we have two separate sources, so that audio is only heard at the intersection?

“What a Quantum _____ looks like”



“What a Quantum _____ looks like”



- Participant selects what category they're interested in: Quantum scientist, engineer, entrepreneur, user, ...
- Camera and image analysis selects a close match from a database, and displays a video personnel file

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