CLAIMS

1. A method comprising:

providing a smart contact lens comprising an array of beamforming microphones, wherein the smart contact lens is worn by a user and the array of beamforming microphones receive sound from different directions;

determining, by a processor, a direction of sound received by the array of beamforming microphones;

determining, by the processor, a focus based on the direction of the sound;

outputting, by the processor, a signal based on the focus;

receiving, by an audio output device, the signal output by the processor; and

outputting, by the audio output device, a filtered sound, the filtered sound preferentially treating certain sounds received by the array of beamforming microphones based on the signal output by the processor.

2. The method of claim 1 further comprises providing a smart contact lens comprising the array of beamforming microphones, wherein the smart contact lens is worn by a user.

3. The method of claim 1, wherein determining the direction of the sound comprises determining a gaze direction of athe user.;

4. The method of claim 3 comprises filteringfilter the sound received by the array of beamforming microphones based on the gaze direction of the user to determine filtered sound.; and output

5. The method of claim 4, wherein the filtered sound is output via a bone conduction hearing device.

6. 2. The method of Claim 3, 4 or 5claim 1, wherein the gaze direction of the user is determined based on sound localization of the sound received by the array of beamforming microphones.

3.

7. The method of Claimclaim 1, further comprising displaying a visual simulation synchronized to the filtered sound.

4.

8. The method of Claim 7claim 3, further comprising changing a playback speed of the filtered sound and the visual simulation.

5.

~~9.~~ The method of ~~Claim 7, further comprises providing a smart contact lens comprising the array of beamforming microphones~~claim 3, wherein the ~~smart contact lens is worn by a user and wherein the~~ visual simulation is displayed by the smart contact lens.

6.

~~10.~~ The method of ~~Claim 7~~claim 3, wherein the visual simulation is displayed on an external display.

7.

~~11.~~ The method of ~~Claim~~claim 1, further comprising displaying a visual augmentation synchronized to the filtered sound.

~~12.~~

8. The method of ~~Claim 9~~claim 5, further comprising changing a playback speed of the filtered sound and the visual augmentation.

9.

~~13.~~ The method of ~~Claim 9~~claim 5, wherein the visual augmentation is displayed by the smart contact lens.

10.

~~14.~~ The method of ~~Claim 9~~claim 5, wherein the visual augmentation is displayed on an external display.

~~15.~~ 11. A non-transitory computer readable storage medium comprising computer executable instructions which when executed by a computer cause the computer to perform a method of filtering sounds, the method comprising:

~~determining, by a processor, a direction of sound received by~~ providing a smart contact lens comprising an array of beamforming microphones, wherein the smart contact lens is worn by a user and the array of beamforming microphones receive sound from different directions;

~~determining, by the processor, a focus based on the direction of the sound;~~

~~outputting, by the processor, a signal based on the focus;~~

~~receiving, by an audio output device, the signal output by the processor; and~~

~~outputting, by the audio output device, a filtered sound, the filtered sound preferentially treating certain sounds received by the array of beamforming microphones based on the signal output by the processor.~~

~~16. The non-transitory computer readable storage medium of claim 15 further comprises providing a smart contact lens comprising the array of beamforming microphones, wherein the smart contact lens is worn by a user.~~

~~17. The non-transitory computer readable storage medium of claim 15, wherein determining the direction of the sound comprises~~ determining a gaze direction of ~~a~~the user~~.~~;

~~18. The non-transitory computer readable storage medium of claim 17 comprises filtering~~filter the sound received by the array of beamforming microphones based on the gaze direction of the user to determine filtered sound~~.~~; and

~~19.~~ output the filtered sound via a bone conduction hearing device.

12. The non-transitory computer readable storage medium of claim ~~18, wherein the filtered sound is output via a bone conduction hearing device.~~

~~20. The non-transitory computer readable storage medium of Claim 17, 18 or 19~~11, wherein the gaze direction of the user is determined based on sound localization of the sound received by the array of beamforming microphones.

13. ~~21.~~ The non-transitory computer readable storage medium of ~~Claim 15~~claim 11, further comprising displaying a visual simulation or augmentation synchronized to the filtered sound, wherein the visual simulation or augmentation is displayed by at least one of the smart contact lens and an external display.

14. ~~22.~~ The non-transitory computer readable storage medium of ~~Claim 21~~claim 13, further comprising changing a playback speed of the filtered sound and the visual simulation.

~~23.~~ 15. A system comprising:

~~an~~ an array of beamforming microphones disposed on a contact lens;

~~a~~ a processor in electronic communication with the array of beamforming microphones and configured to determine a direction of ~~sound~~a plurality of sounds received by the array of beamforming

microphones, determine a focus on a first sound of the sounds based on the directions of ~~sound~~sounds relative to an orientation of the array of beamforming microphones, and output a signal based on the focus; ~~and~~

~~———~~an audio output device configured to receive the signal output by the processor and to output a filtered audio, the filtered audio preferentially treating ~~certain sounds~~the first sound received by the array of beamforming microphones based on the signal output by the processor~~.~~; and

~~24. The system of Claim 15, further comprising~~ a mobile device including the processor~~,~~ ~~wherein~~ and paired with the array of beamforming microphones ~~are disposed on a contact lens.~~ .

~~25.~~ 16. The system of ~~Claim 24~~claim 15, wherein the ~~contact lens~~mobile device is paired with ~~at least one of the mobile device and~~ the audio output device.

~~26. The system of Claim 23, further comprising a mobile device including the processor, wherein the array of beamforming microphones are disposed on a frame of eyewear.~~

~~27. The system of Claim 26~~17. The system of claim 15, wherein the array of beamforming microphones is ~~pointed~~oriented substantially in a direction of a view afforded by the ~~frame of eyewear~~contact lens when worn by a user~~.~~

~~27. The system of Claim 24, wherein the array of beamforming microphones is paired with at least one of the mobile device~~ and toward a source the first sound.

18. The system of claim 15, wherein the mobile device comprises the audio output device.

~~28. A computer program comprising program code means adapted to perform the method of any claims 1 to 14, when said program is run on a computer.~~

19. The system of claim 15, wherein the mobile device including the processor is configured to detect a predetermined sound having a priority greater than the first sound,

wherein the processor is configured to preferentially treat the predetermined sound over the first sound,

wherein the system further comprises a memory accessible to the processor and storing a set of priorities for predetermined sounds, including the predetermined sound.