**Project Proposal: Binaural Spatializer**

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Our ears pick up on many different alterations to sound waves made by reflecting/refracting off of our environment, head, and ear pennae in order to determine the source of a sound. My goal is to be able to recreate these alterations and apply a spatial effect to an input audio to make it sound like it is originating from a different location in space.

Unfortunately, since each person's pennae is different, there are subtle differences to the way each person interprets the audio cues. Ultimately, the effect will not perfectly recreate the personalized changes needed for each individual listener, but there are still major audio cues that are mostly the same for every person. My hope is to be able to recreate these common distortions.

My plan is to construct a makeshift head with model pennae and two microphones inside each ear to create a binaural microphone. I can then record audio played by an external speaker to record the effect. From what I understand so far, I will need to figure out the impulse response of the binaural microphone from the speaker. I am still unsure on the specifics of how to do this, as well as how I will apply this effect artificially with software. This will be an area of research I will need to conduct.

I am a bit worried that the quality of the speaker will have a direct impact on the quality of the impulse response recording and thus be contained in the output effect as well. I also realize that the audio characteristics of the room I am in will also be captured in the effect as well. I am not sure if this will be a big deal or not - perhaps I could record it in a big field outdoors or something, but this would bring a new host of issues.