

## Virtual Conducting

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For our final project, we plan to design and implement an interactive music player which allows the user to control the sound of a composition through hand movements. The idea is to emulate the experience of a conductor directing the flow of a musical performance.

The design will use a camera to detect hand movement of the user and adjust musical qualities such as tempo, dynamics, and articulation in response to these motions. The camera will detect the user's hands on the screen. One hand will control the treble, while the other will control the bass of the piece. Volume of each part will be controlled by the size of the corresponding hand's movement.

The frequency of the hand motion will control the tempo of the playback. Similarly, the acceleration of the hand movement will dictate the articulation of the music: more acceleration corresponds to more pronounced articulation such as *staccato* while less acceleration corresponds to smoother articulation such as *legato*. Additionally, the design will include a screen which will display a visualization of the hand movements, following the path of the conductor's hands. The screen will also display useful information such as the current tempo, volume, and articulation to provide feedback for the user.