

Rollerblade Sonification Simulator User Guide

The project focuses on improving rollerblade skaters' experience while skating, injury prevention, and making the right positions to achieve the best technique. The target user for this project is someone who is just getting into rollerblading and wants to learn new skills. Hence, the user is someone in their young adult years taking on a new hobby. The scenarios are quite basic considering they are rolling straight, rolling uphill, and rolling around the cones. The third one is definitely a bit more advanced but a beginner skater would want to learn a basic advanced skill early. This information has been collected through personal experience and many skaters that I have asked.

The user interface is simple to understand. The user should first try out the interface using the "Try It" option located on the user interface. This will unhide all the controls such as the leg positions which all produce different sounds according to the programmatic sound waves. These sounds serve as alerts from incoming JSON files when a wrong leg position is used. Next, there are additional controls such as leg placement, midline closeness, and rolling off which all serve as additional sonification strategies which will be discussed according to scenarios below. Also, sonification is being done by alerts for the different leg positions such as top right/left, bottom right/left, and side right/left while the other strategies are done by manipulating the song being played in the background. This is assuming the user listens to a song while rollerblading.

Scenario 1: This scenario corresponds to a user going straight. Wrong leg positions would be anything except top right and left. Only 2 positions are needed to accommodate acceleration capabilities. This scenario is quite simple since it only provides alerts over the background music when a wrong leg position is placed. The other scenarios use more advanced sonification strategies.



Scenario 2: This scenario corresponds to a user going uphill. When going uphill, the bottom and top leg positions are used, and not the side ones. Hence alerts, are given if these are used. Additionally, "leg placement" is a new aspect added here. If the leg placement in that top right position for example is off, it can ruin the technique of going uphill. Hence, leg placement is important. Depending on where the leg placement is from -1 to 1, it uses a panner to give the effect of sound only coming from different sides of the speaker. The 0 level is the normal speaker level.

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Scenario 3: This scenario involves weaving cones where both legs are outward at a cone and they come back inward in between cones. This skill improves leg-eye coordination, hence it is involved in this project. In this scenario, only the side leg positions are considered accurate. And, leg placement is again involved here as another aspect. A new aspect is added called “midline closeness” which has a slider from -100 to 100 which is an important factor to know going around the cones. As the meter approaches to the lower extreme, higher frequencies are cut and the vice-versa is also true.



The UI has several other controls that a user can use. For example, the UI can be muted if a user needs a break from the feedback or wants to change to a different scenario that they are performing. They are a volume slider that will adjust to the needed setting. And, there is a “rolling off” slider that tells the user if they are going off of their path. If they are, then the song being played goes into slow-motion mode. The vice versa is true for the upper extreme. And, a couple of display elements are total alerts and time since they started a specific scenario. Also, the music will loop back as long as needed.