6.111 Final Project Abstract

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Virtual Drum Set

It is said that air drumming provides the same level of satisfaction to the user as drumming on a physical drum set does. Knowing this, why should everyone have to own a drum set to start drumming? For our final project, we have the intention of implementing a gesture-controlled virtual drum set on the 6.111 FPGA lab kit to provide a simple and fun way for people who wish to learn or simply enjoy drumming.

More specifically, the users hand motion would be tracked by a camera system. The user wears two distinct color gloves to ease the motion tracking. The motion tracking system will distinguish between hitting motions in different areas in front of the user and emulate sound of distinct drums based on hitting area. At a basic level, the implementation would consist of a limited number of drum set elements and basic playback of sounds of the drums the user plays.

Depending on available time, other features could be added. An example is a game/ learning mode in which the user loads pre-processed songs into the lab kit and air drums in tandem to them. Another idea is to provide the user with an increased number of drum set elements for increased sound options. We expect that by successfully implementing the basic functionality, the system will be robust enough so that a wide range of additional features could be completed easily.