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Project Abstract

At a high level, our project will be a referee for a game called snappa. In snappa, two teams of two sit opposite one another and take turns throwing a die underhand so that it travels in a high arc and lands on the table. If the die goes off the opponent's end of the table without being caught, the shooting team scores a point.

There are certain constraints for what makes a given snappa throw point eligible:

1. The throw must not hit the ceiling. If this happens, the die is dead and the play is over.
2. The throw must leave the table off of the back edge (edge opposite the shooting team on a rectangular table) after landing on the table.
3. The throw height must be greater than a loosely defined "low line" the four players agree on before the game.

The first rule is very easy to referee because you can hear the die hit the ceiling. The second rule is decently easy to referee with some exceptions with the die leaving the table at a diagonal (will discuss later). The third rule, however, leads to many disputes and ill-feelings among players because the defensive end consistently sees the throw as lower than the offensive end sees the same throw.

This is where our snappa referee would come into play. The referee would consist of a camera looking at a complete side-view of the arena. This image would be sent to the FPGA to be displayed on a monitor with some augmentation. A virtual "low-line" would appear horizontally on the image to represent the loosely defined threshold. When a throw is made, the FPGA will pick up the thrown object as it enters the field of view. It will then determine if the object clears the "low-line" without hitting the top of the view (the ceiling). If the object does not clear the line, the display will indicate that the throw was not point eligible.