FOOZEE
the automated foosball table

OVERVIEW

Foozee is an automated foosball table designed to allow a user to play a game of foosball without another person. As Foozee captures a video stream of the playing field, it will control the foosball players in a strategic manner. Foozee's tracking algorithm generates a command for the motors, which controls the position of the players. During game play, a single user is challenged in a game of foosball as Foozee competitively reacts to the playing field.

MOTIVATION

A traditional foosball table requires a person to be on each side of the table to control the players for that team’s side. However, a second player is not always available.

METHODS

Foozee repeatedly performs a series of tasks in order to function. The system is split into two modules: image processing and physical movement. The image processing is in charge of capturing and tracking the location of the foosball and sending commands to the physical modules so that it can react accordingly.

Physical Movement Module

The physical movement module enforces the commands of the image processing module. These commands consist of locations in which the foosball players should be. Once the physical movement module receives a command, it uses motors and lead screws to place the foosball players in the correct location.

Image Processing Module

Through a series of steps, the image processing module predicts the ball’s trajectory. Once the trajectory is calculated, commands are sent to the physical module so it can do its part.

SYSTEM DIAGRAM

RESULTS

Foozee successfully tracks the foosball at a rate of 25 frames per second. Serial communication is successfully relayed between the laptop and the Arduino. The lead screw and NEMA 17 stepper motor combination translates the foosball rods at 1.5 inches per second. The kicking motion occurs at a rate of four revolutions per second.

COMPUTER ENGINEERS

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