Autonomous Foosball Table

Group 4

## Introduction

An autonomous foosball table is a foosball table that offers a robotic opponent which can challenge human players. It allows one to play foosball without the need of finding another human opponent and play with AI on different difficulty levels.

## Objective

The ultimate goal of this project is to design and build a low-cost foosball table that can compete with human players on different skill levels safely.

## Motivation

Foosball is entertaining but sometimes finding a player or a team that plays on the same skill level might be difficult and currently there is no such automated foosball table in mass production.

## Team Background

Yue Ma(Ryan)

4th year mechatronics student, previously worked on software testing automation at IBM and has strong interests in Computer Vision.

Taha Hussain

4th year mechatronics student and has been involved in Sumo bot (mechanical design as well as the software). Also worked with STMs and arduinos mainly by interfacing them to electronics components some of which are stepper motors.

Chenhe Li(Frank)

4th year mechatronics student, previously worked as a researcher assistant in McMaster on indoor Wifi positioning on android devices. Familiar with low-level programming, electrical circuit and AutoCAD.

Zi Zhou (Roland)

4th year mechatronics student, worked on Sumo bot and currently working part time at a startup company on Web development.

Alvin Li

4th year mechatronics student, worked on a heliostat project(mainly working with arduinos). Also familiar with STMs and AutoCAD.

Viktor Smirnov

5th year mechatronics student, taken extra ECE courses and familiar with control systems.

## Implementation Areas and Approaches:

Mechanical

* using gear/timing belt with stepper motor or use a fast linear actuator to achieve linear translation
* using stepper motor to achieve the rotation of the rod

Electrical

* Motor controller/driver
* Power supply

Software

* ball tracing: computer vision(OpenCV)
* movement prediction
* AI reaction