

Project Goals v1.0

Group 4: Autonomous Foosball Table

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# **1 REVISIONS**

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| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Description** |
| 0 | October 18, 2015 | Ryan Ma,  Chenhe Li,  Taha Hussain,  Viktor Smirnov,  Zi(Roland) Zhou,  Alvin Li | Initial version |
| 0.1 | Feb 27, 2016 | Chenhe Li | Updated cost |
| 0.2 | Feb 28, 2016 | Ryan Ma | Added Development Time |
| 1 | Feb 29, 2016 | Ryan Ma,  Chenhe Li,  Taha Hussain,  Viktor Smirnov,  Roland Zhou,  Alvin Li | Fixed grammar and updated format |

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# **3 INTRODUCTION**

## **3.1 Purpose**

The purpose of this Project Goals document is to define the target of our end product, that will be based on the research of the currently existing market, and we think is achievable during the time frame of the Capstone course. This document acts as a guide for later stages in the development process, including validation and verification.

## **3.2 Scope**

This document focuses on the high-level description of the project goals and methods to determine whether the final product has met our goal.

## **3.3 References**

[1] “Foosball Rules” Internet: <http://www.foosball.com/learn/rules/>, Apr. 02, 2009 [Otc. 19, 2015]

[2] Michael Aeberhard, Shane Connelly, Evan Tarr, and Nardis Walker. fall 2007. Single Player Foosball Table with an Autonomous Opponent. Available: <http://www.eskibars.com/projects/foosball_robot/final_rpt.pdf>

[3] “NetFoos Box Statics” Internet: <http://www.netfoos.com/box_stats/match_summary/6/7/13.html>, Sep. 26, 2006 [Otc. 19, 2015]

# **4 GOALS**

## **4.1 Features**

1. The system shall follow the basic rules of foosball[1].

In order to achieve a fair and entertaining gameplay, the system should follow the basic foosball rules.

1. The system shall consist of three difficulty levels for different player skills.

In order to improve the overall gameplay experience and be fun to play against, the device must be able to provide replayability by introducing a competitive opponent to user.

## **4.2 Performance**

1. The system shall score at least 50% of the shots taken when unopposed.

In order to provide a competitive opponent the system should at least be able to score half of its shots when the goal is unattended. The existing solutions with similar cost can only score 10% of its shots unopposed in practice[2].

1. The system shall block at least 70% of human shots at the highest difficulty level.

The current existing product can only block 33%[2], while the block rate in professional foosball games benchmarks at about 50%[3]. Our fast-reacting system could make the gameplay even more competitive and intense.

## **4.3 Cost**

1. The cost of autonomous foosball table shall be less than 600 canadian dollars.

We are aiming to build an affordable autonomous foosball table while keeping the performance at a competitive level.

## **4.4 Safety**

1. The system shall halt within 200ms after an unknown object is present in the playfield.

This goal is meant to provide an environment safe for players during active gameplay, in order to minimize the potential risks to their health.

## **4.5 Development Time**

1. The initial product should be built by before April 24th, 2016.