# Murphy Dudevoir

# GDD3400 Final Project Report

This is your final project report where you will document your project. Requirements are listed beneath each title to make it easier for you to justify your solution.

Beneath each set of requirements, document how you satisfied the requirements. ONLY discuss features you actually implemented and do not discuss features that you planned or designed but failed to implement. If you did not implement a feature leave “DID NOT IMPLEMENT” under that section title, otherwise, replace it with a description of your implementation. Also document your game’s title, razor statement, description, and features. It is ok if these have changed from your original game treatment.

## Game Title

Sports Balls

## Game Razor Statement

Challenge artificial intelligence, in a sporting match it was literally created to play, to prove you are the ultimate Sports Ball champion.

## Game Description

You play as a modern day athlete trying to prove they are the greatest at what they do. Someone has created an artificial intelligence to play the game, and in order to prove you are the best, you must compete against it. You must train against the less intelligent versions to prepare yourself to fight the greatest challenge the bots have to offer.

The sport you are trying to master takes place in a flat arena with various obstacles stopping you from getting the ball into the opponent’s goal. You must do your best to get the ball into the opponent’s goal more times than they can in the allotted time to win. Defeat all of the AI and you will be crowned Sports Ball Champion.

## Game Features

* Slide around the sports arena
* Hit the ball into the opposing goal
* Sprint for a large boost of speed
* Compete against an AI agent

## Environment

* Implemented in Unity (2D, Isometric or 3D)
* 2+ player environment (AI vs. Human and AI vs. AI)

## Interface Elements

* UI elements unique and differentiable
* Title screen
* Credits screen
* Instructions screen
* Tutorial
* Game over screen with appropriate win/loss message
* Sounds, effects, etc.

## Win Conditions

* Score 2 goals
* End time with more goals than the enemy

## Maps

* Easy (no obstacles)
* Medium (Walls in front of goals)
* Hard (Walls, and pillars)

## Advancements

* Reduce cool down of special move

## Agent Design

* Easy, Medium, and Hard AI
* Agents visually unique and differentiable

## Individual Agent Movement

* Agent avoids collisions with other agents and obstacles
* Agents propel themselves towards other objects using physics
* Agents move to specific locations when on defense

## Agent Decision Making

* AI decide where to be based on location of the ball
  + Their distance from it
  + Their angle to it relative to the goal
  + Its position on the field
* Whether or not they are on defense

## Agent Planning and Coordination

* Hard AI plan what to do based on their role (Defense or not)