PONG

Shalev Shalit, Daniel Friedman

Advisor: Prof. Amnon Meisels
About the Game

Pong is one of the earliest arcade video games. The game was originally manufactured by Atari, which released it in 1972. It is a two-dimensional sports game that simulates table tennis. Each player controls an in-game paddle by moving it horizontally across the left or right side of the screen trying to hit the ball back and forth. The goal is for each team to reach three points before the opponent. Points are earned when one team fails to return the ball to the other.
Online Multi-Player

In the original game only two players could compete against each other, running on the same device.

We made two major changes - The first one is the ability to play from different devices. The second major change is that we let more than just two players enter and play the same game.
How To Play

Each player controls a racket. The objective is not to let the ball pass it or else the other team will get a point. In order to move the racket, we used the ‘touch’ possibility of the smartphones, the player just has to slide his finger from left to right or from the right to the left according to the direction in which the player wishes the racket to move. Plus, the player can tap on the screen in order for the racket to ‘jump’.
Each team tries to win by accumulating 3 points. Additionally, the player whose racket touched the ball last when scoring will receive 1 individual point in addition to the team score. At the end of the game (When a team reaches 3 points) each player will receive points according to his individual points, only if his team wins the game.

This game is planned to serve as the basis for research on multi-agents learning of teamwork. Learn to help your team win, but try to establish your own excellence at the same time.
Data Structure

Game
- id: guid
- players: Player[]
- ball: Ball
- started: boolean

Ball
- score:
  - blue: number
  - red: number
- speed:
  - x: number
  - y: number
- velocity:
  - x: number
  - y: number
- last:
  - red: guid
  - blue: guid

Player
- id: guid
- team: red|blue
- goals: number
- name: string
- uniqueColor: #hex
- position:
  - x: number
  - y: number
- body: Matter // only local
Cross Platform Application

We used React Native, a Cross Platform Application framework that supports a mobile application for android & iOS in multiple devices.

We faced 3 main issues when working on this kind of app:

https://youtu.be/G4F5gjrbSxo
Data Binding

Collision

Velocity
Speed
Last

Firebase
Binding Players Movements
Playing Example