

“Spider Square” Robot Final Project Report

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Abstract

Haris Godil and I spent this semester working on a robotics and computer science project in which we attempted to build a robot capable of playing the popular mobile phone game “Spider Square”. The game revolves around tapping the screen to propel the player through a side-scrolling field of obstacles, and was seen as a prime candidate to apply artificial intelligence due to the simple output states: touching or not touching the screen. The project combined our experience with low-level hardware controllers and high-level artificial neural networking and computer vision. We were able to fairly accurately determine the game state with computer vision, train a basic neural network, and run various tests on our finished robot including reaction time.

1 Introduction

“Spider Square” is a side-scrolling mobile game in which the player taps the screen to swing their character to the right. The screen continually scrolls right to left and the player’s objective is to advance as far as possible without colliding with the floor, ceiling, or any obstacles that appear in the course.

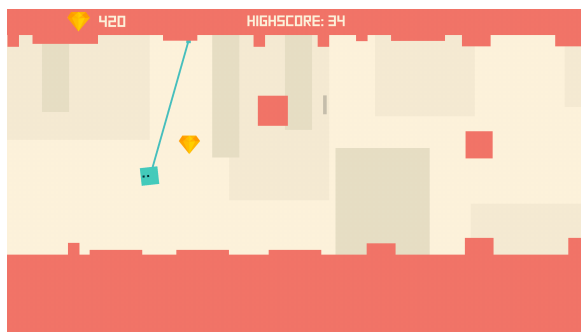


Figure 1: Spider Square screenshot

As shown in Figure 1, the blue square is the player’s character, with the red floor, ceiling, and blocks represent obstacles that destroy the character and cause the game to end. The player moves the square

through the level by tapping anywhere on the screen to cast the “web”, a blue line drawn from the square to the ceiling that pulls the square to the right and upward, progressing through the level. The blue square’s horizontal position never changes, the level moves around the player. Moving obstacles and narrower passages appear as the player progresses in the game.

The goal for this project was to create a standalone robotic controller for a mobile phone capable of capturing the phone’s screen and driving the input to the game in such a way that the player progressed as far as possible without colliding with the stage.

2 Methodology

3 Results

4 Conclusion

5 References