**Baseball At Bat Simulator**

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**Problem:**

Baseball is a very stat driven sport, with an increasing reliance on matchup data. You are a very scientifically sound pitching coach, and you wish to find the best way to strike an imposing batter out at the plate, thus making him useless to the opposing team. You want to make it so this batter does not even have contact with the ball at all, (lets just assume every contact is a homerun, even though that is impossible) and use the data gathered by the MLB to find a 3 pitch combination for 3-4 at bats, that will touch the strike zone and not have contact.

**Approach:**

Using MLB stats, and “hot zones” divide the strike zone into 9 partitions and find a pitch weakness for these zones. Compile a strategy that does not repeat the same partition and pitch to minimize contact and strike the batter out. Choose a real-life batter (can be anyone but for realism, choose a team’s most dangerous hitter [batting average]), and find the best combination to strike this person out, as well as track the pitch using Python Graphics.

**Objectives:**

1. **Collect the Statistics for your batter and the conditions for a real MLB Ballpark of your choice**
2. **Determine the batter’s weak zones, and propensity to hit different types of pitches.**
3. **Find a combination of different zones and pitches using hitting statistics to minimize contact (fastball, curveball, slider, etc.. with the goal to strike the batter out)**
4. **Illustrate the pitches via graphics**
5. **Maximize pitch movement for Breaking Balls/ pitches that require movement to successfully pull off (using spin and air resistance to coach your pitcher to become better [how much spin should be applied, at what speed to throw, and where to throw it to maintain optimal pitch placement])**

**BONUS IDEAS**

* **Using the air density of different ballparks, find the best/worst park to pitch in baseball**
* **Choose an actual pitcher in the MLB instead of just an average pitcher who can throw anything, and utilize his actual velocities and types of pitches in the same way.**
* **Increase your number of batters to represent a real game (27 at bats, 9 different players) (for this idea, contact may be permissible, but keep runs per game under 3) (This simulates a 9 inning outing, the goal of course is a perfect game (27 strikeouts with no contact))**