

Race Track Simulation

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INTRODUCTION:

Lately I've been researching *The Simulation Theory*: an increasingly popular creation theory that humans as we know them and everything around us are alive and existing within a computer simulation. For some this is the fuel behind studies of artificial intelligence and virtual realities. I saw this project dedicated to agency as a chance to think like one of these creators, if only for a short time. I thought "What's the most human thing? Something entirely unique to us?" I decided on sporting events. Specifically the race track, because the circular nature of racing in laps is nicely geometric for an ease of access in my code.

PROCESS:

I started wanting to stage and simulate an entire event with my three agents including the audience, race crews, and the race cars themselves. But after getting hung up on the cars, and discussing my dilemma in office hours I decided to focus on making the race something people could actually watch with similar intrigue to the real world event.

So I started the project by creating the track, and the cars moving around it. Drawing the path for the cars via text-based logic was an interesting logical dilemma due to the precision of where every car should turn at every corner. What this ended up producing is a staggered start for the cars, and then they all followed the same path.

Once I had all the cars moving in the same path I asked "What gives one racer the winning edge?" Acceleration was my next hurdle. The cars accelerate on straightaways and slow down when rounding the corners. Their speed is also capped so that nothing gets out of hand, or just invisible due to

impossibly high two-dimensional speeds. Digging into this question of why racers beat each other led me to begin attempting to simulate real world physics like velocity, braking, sliding off-track and crashing. The project seemed a little more complex than I intended.

I began vectorizing the cars in attempts to tie more realistic parameters to them. However I have found myself aggressively struggling to succeed at this, and intend to study vectors in smaller ways over the summer.

INTERACTION:

The four cars in the piece showcase this piece's principles of interactivity. Their goal is to get their lap counter to the goal before the other cars. My goal was to successfully program collisions detection, and have the cars avoid each other, speed up based on their relative locations, and to gain confidence in the form of a speed boost when winning.