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CMPM 146

Assignment 1 Report

In your report you should answer the following questions:

1) **How do you determine which direction to turn?**
   To determine which direction to turn, the code compares the car's current forward direction to the direction toward the target
2) **Did you change any of the car's parameters? (max speed, acceleration, etc?)**
   Yes, we changed the speed minimum speed and rotation speed. These parameters control the car's movement and ensure smooth and gradual changes in speed and rotation.
3) **How do you slow down as you approach the target?**
   The speed is reduced as the car approaches the target by using a factor that is proportional to the distance.
4) **When following a path, how do you make sure to turn smoothly around corners?**
   By reducing speed and adjusting rotation over time, the car can smoothly navigate tight corners along the path.
5) **Did you encounter any particular challenges during the assignment?**
   The main challenges were making sure the car turned smoothly without jerking around, which I fixed by using Mathf.SmoothDampAngle(). I also had to balance path-following and target-seeking, so the car switches to direct movement when there's no path. And, I had to manage how the car slows down to avoid overshooting the target by adjusting the speed and using an arrivalThreshold to stop once it gets close.

6) **The report should also contain a brief (1-2 paragraph) retrospective by each individual student about their contributions and what they learned, as well as an AI-statement, if any generative AI was used for the assignment and how.**

Sean's retrospective:
For this project, I focused on implementing the car's movement logic, balancing between path-following and seeking a direct target. I learned a lot about smooth rotation handling, ensuring the car turns smoothly around corners, and how to manage deceleration when approaching a target to avoid overshooting. I also gained a deeper understanding of how to integrate pathfinding and target-seeking behaviors while maintaining responsive and intuitive movement. It was a challenge to make sure these systems didn't conflict and worked together seamlessly.

Zuhair's retrospective:
In this assignment, I was focused on the FollowPath method as it's the most in depth implementation of the assignment. It took a while to understand how to implement the velocity specifically when the car is turning however this was my best attempt at trying the method. I was able to gain a better understanding with respect to the "physics" of the game as it was fun trying to figure out the right velocity for the car once the framework was settled. A challenge I ran into was tuning the speed and rotation so the car didn't overshoot or circle around the target.

AI Statement:

Sean - I used generative AI for generating some of the logic for smooth rotation handling, especially for ensuring gradual turns using Mathf.SmoothDampAngle(). The AI helped refine and streamline certain aspects of the car's movement logic but was not used for creating any major parts of the gameplay or mechanics.