

Quest 6 Demo: Track Navigation Competition

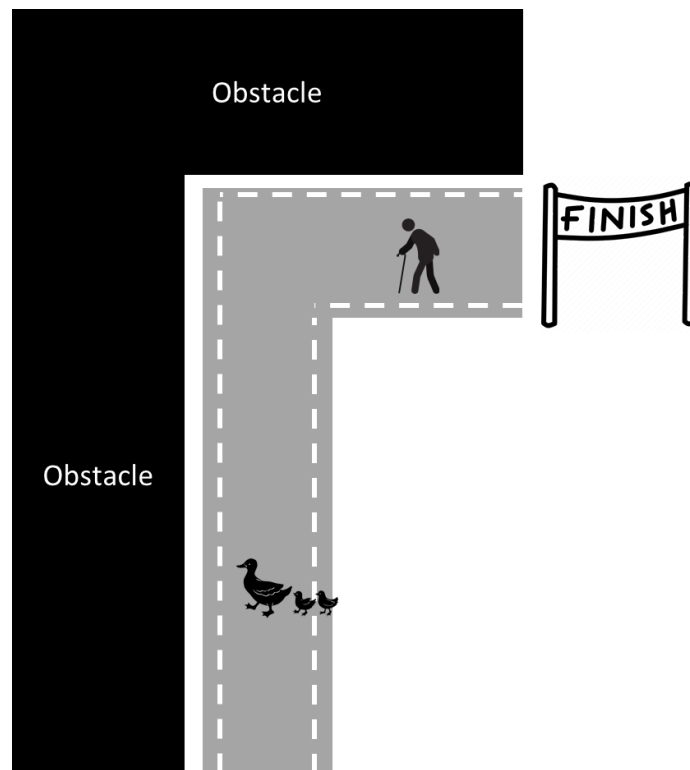
Quest 6 Demo Date: 5/3

Kit Return: 5/3 (Following Quest 6 Demo)

Final Demo for Quest 6 will take place on 5/3. The week of 4/25-4/29 will be used to implement additional functionalities, described below. In addition to completion of the quest, most seamless, timely, and smooth navigating teams will win awards as part of a track navigation competition (i.e., the demo for quest 6). The winning two teams will earn a \$20 amazon gift card (for each student).

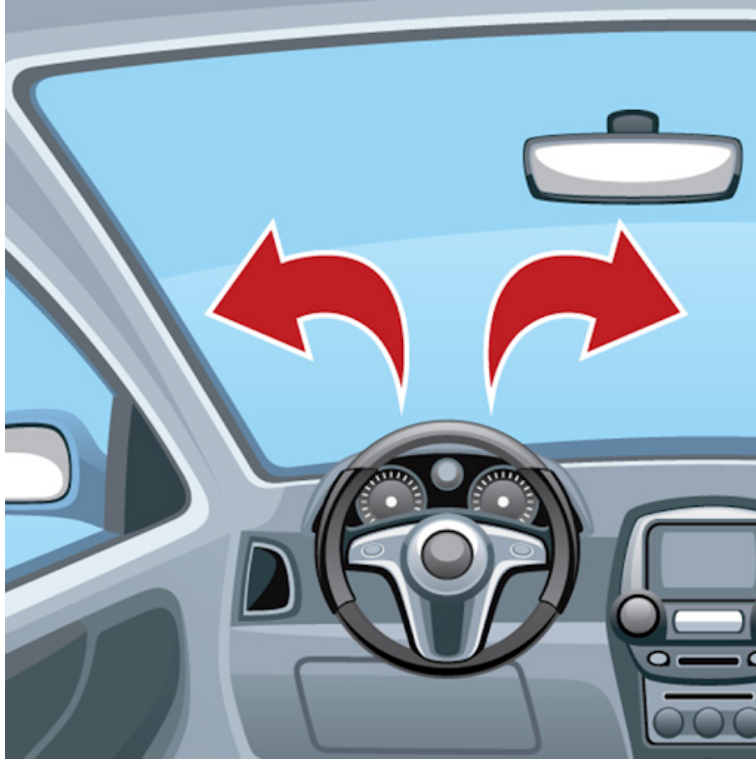
Competition Metrics: Collisions, route completion %, time to destination, deviation from lane center (we will provide dimensions regarding lanes prior to the track navigation).

Track Navigation Task: The track will incorporate elements from the skill to achieve staying in lane parallel to the wall, stop for an obstacle, then continue until a turn, and turn. We do not reveal whether the turn will be to the left or to the right. Instead, this must be queried to a user in real-time, based on skill 34 (below). The user will specify the turn direction, and the car will then turn and continue along a perpendicular wall until the finish line, as shown in the figure below. To accommodate this track navigation, we add skill 34 below. Note that there may be more than one obstacle and turns in the actual track.



Quest 6 - Skill 34: User-Based Command for Navigation

In this skill, you will be creating a common scenario. The vehicle approaches a turn and must decide if to turn left or right.



You are asked to implement:

- Slow down for an obstacle/intersection that is upcoming.
- Report and query what to do to a user.
- The user should determine whether the vehicle should turn to the left or to the right.
- The car should then execute a 90 degree turn in the direction specified by the user.

Note that in the final track navigation task, this skill will be used to determine whether to turn left or right at a turn (the test track may have one or the other, but we do not reveal the direction beforehand).

Quest 6 - Skill 35: Your Own Buggy Design

In quest 6 you are asked to introduce your own smart/connected functionality to the buggy. This functionality will be demoed for the us and the class on 5/3 along with the track competition.

- Introduce a functionality that is meaningful in the context of buggy and autonomous vehicles, i.e., go beyond repurposing of prior quests.
- Higher scores will be awarded for quests with (a) robust and well-designed solution, (b) higher levels of difficulty -- more complex solutions with more integrated parts.

Notes About Final

Final Date and Time: 5/9, Room: 117, Hours: 3-5PM.

Material will be based on slides.