Briefing

Do not take this study on a mobile phone, the text and images won't display correctly.

Do not take this study if you have done a similar one before recently.

You are free to leave at any time.

The study will take around 12mins.

You will be paid $12 per hour for your efforts.

Thank you for your participation!

Block 53

Please Enter Your Prolific ID Here

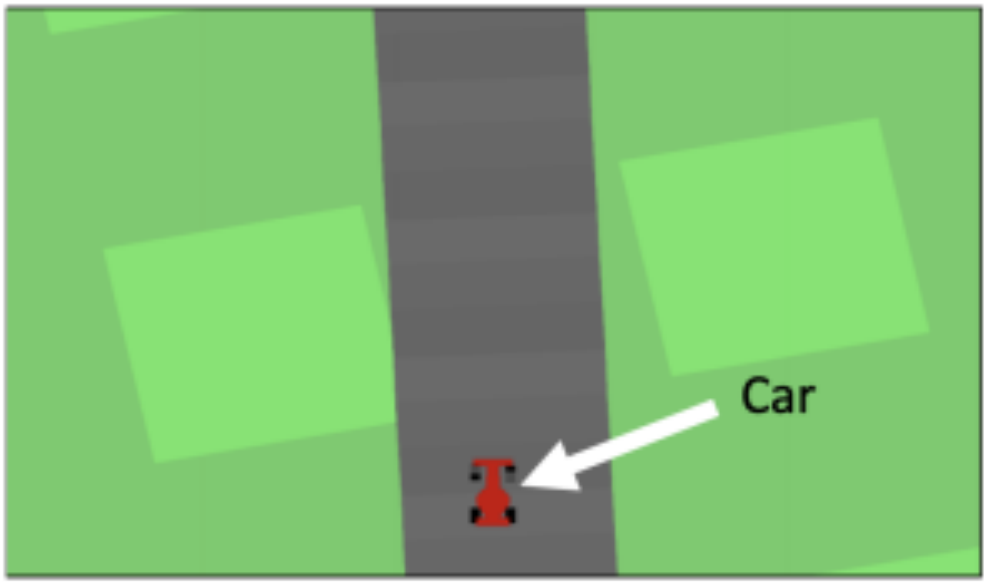
Introduction 1

Introduction

A computer program has learned to drive a car using ***four human-defined concepts***.

The four concepts are:

1. Accelerate
2. Brake
3. Turn Left
4. Turn Right



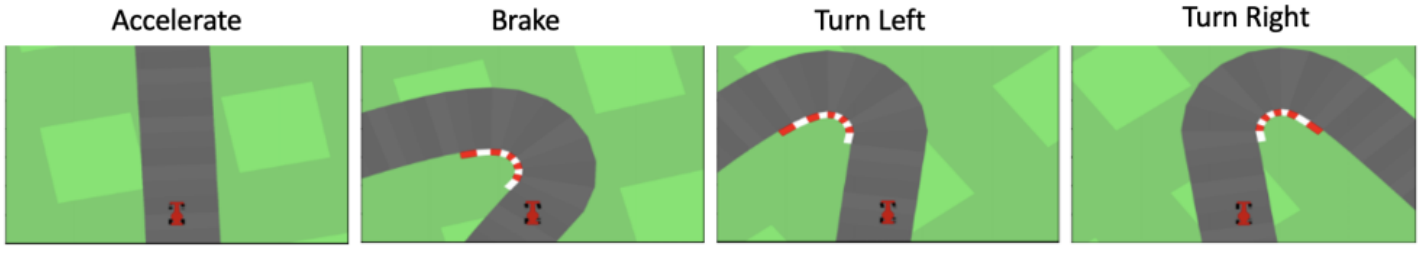
Important: In all images you see, the car is constantly moving forward.

Introduction 2

Introduction

To explain what the car understands by these four concepts, it visualizes them for people using these four images. **Please study them now** to see if they make sense to you, and if you think the car has learned the concepts correctly. The car drives based on how similar its situation is to each concept.

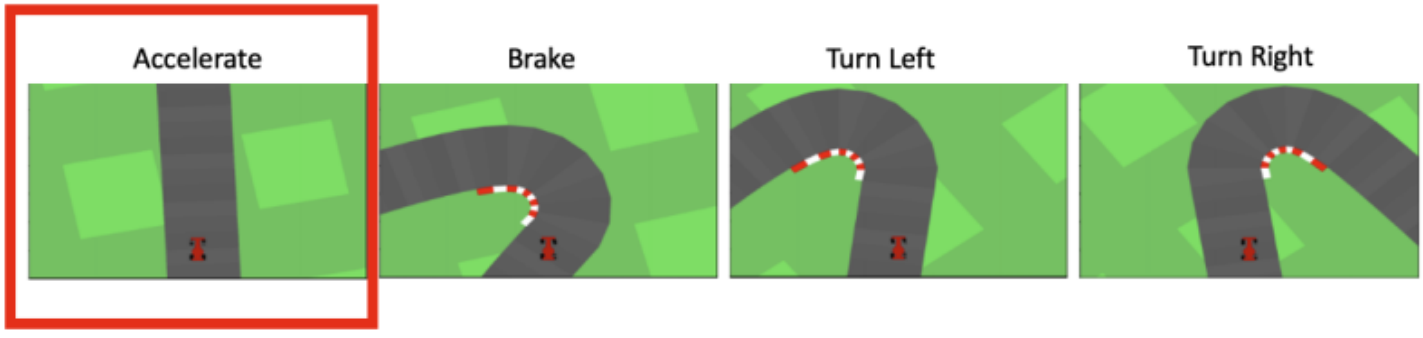
The ***actions*** associated with each concept are above each picture.



Introduction acc

Introduction

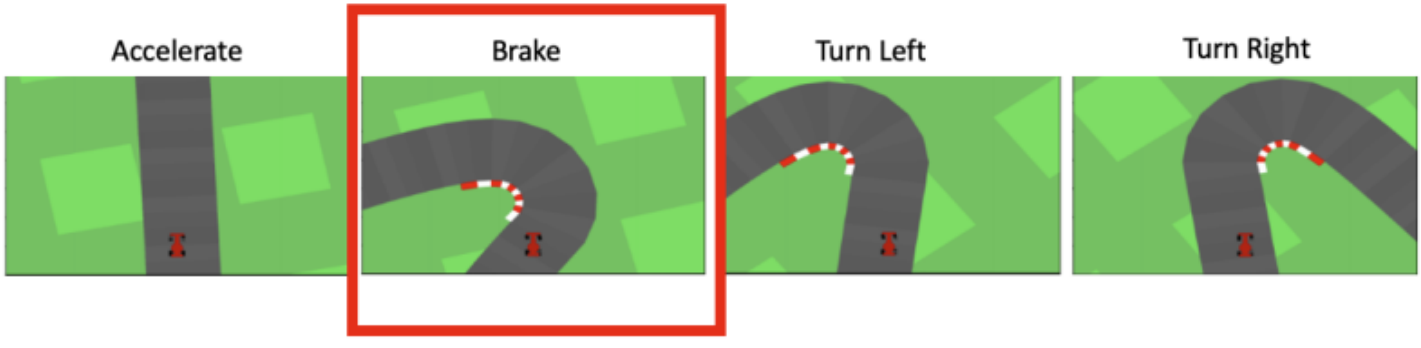
So, the car will take the action ***ACCELERATE*** in situations it thinks are similar to this.



Introduction brake

Introduction

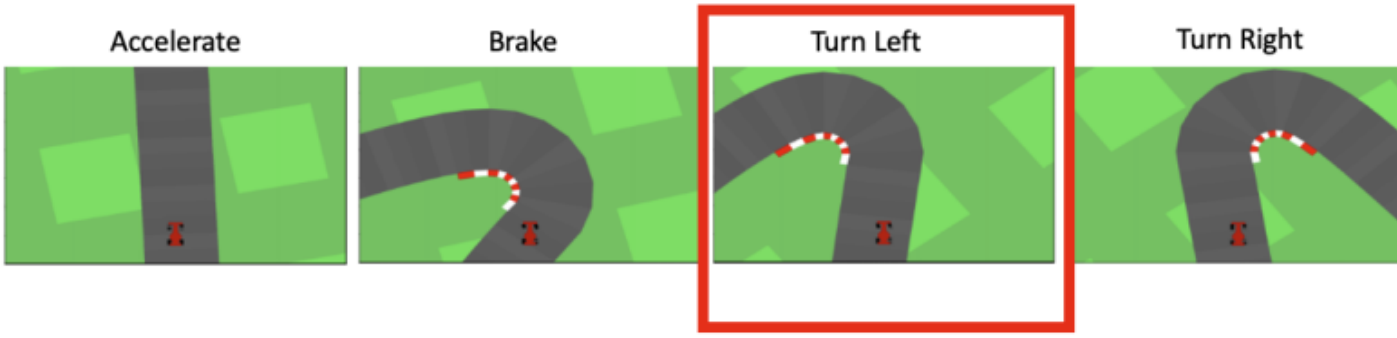
The car will take the action ***BRAKE*** in situations it thinks are similar to this.



Introduction left

Introduction

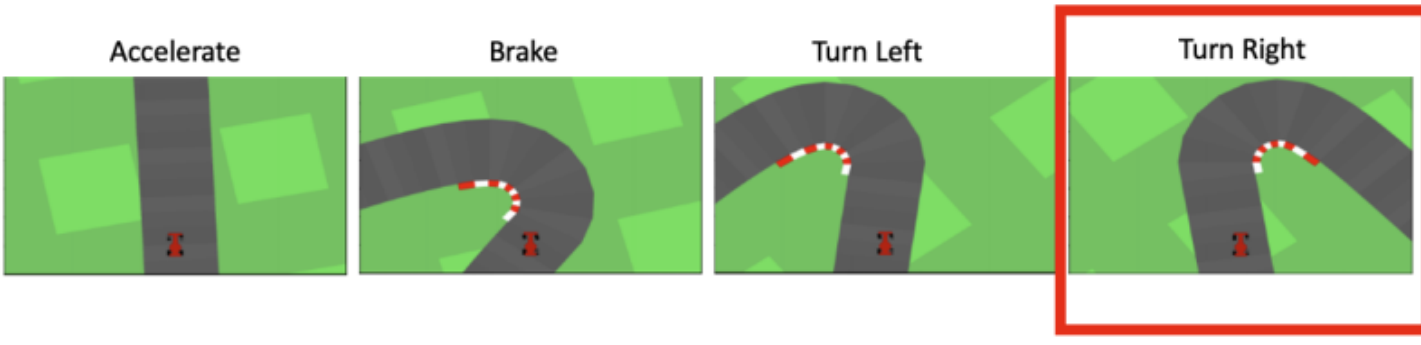
The car will take the action ***TURN LEFT*** in situations it thinks are similar to this.



Introduction Right

Introduction

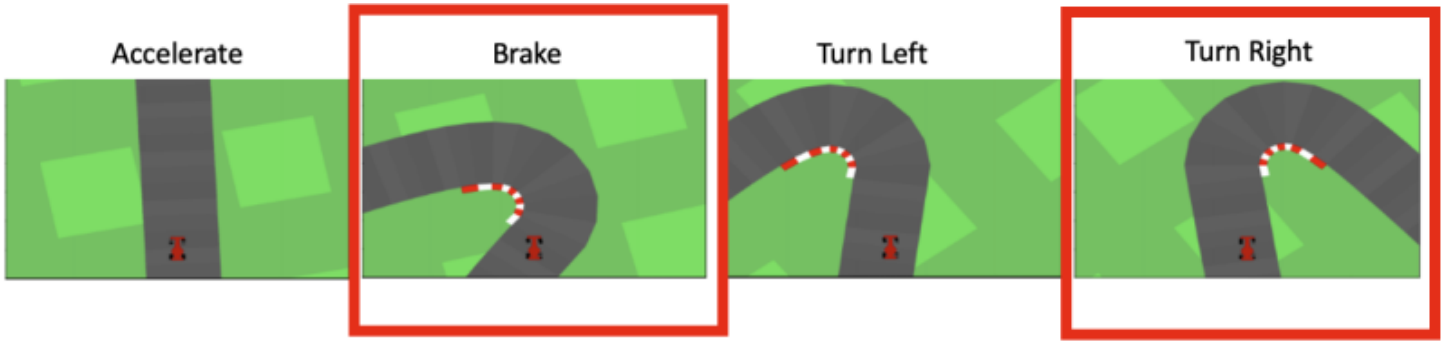
The car will take the action ***TURN RIGHT*** in situations it thinks are similar to this.



Introduction combine

Introduction

Lastly, the car can combine concepts, and will ***TURN RIGHT*** and ***BRAKE*** ***at the same time*** in situations that it thinks are similar to ***both*** of these.



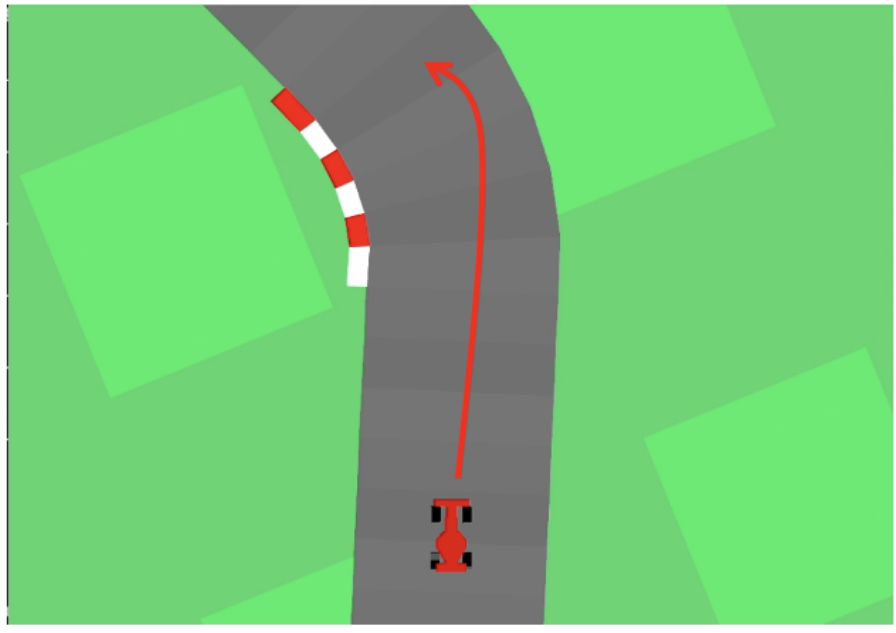
Example 3

Example

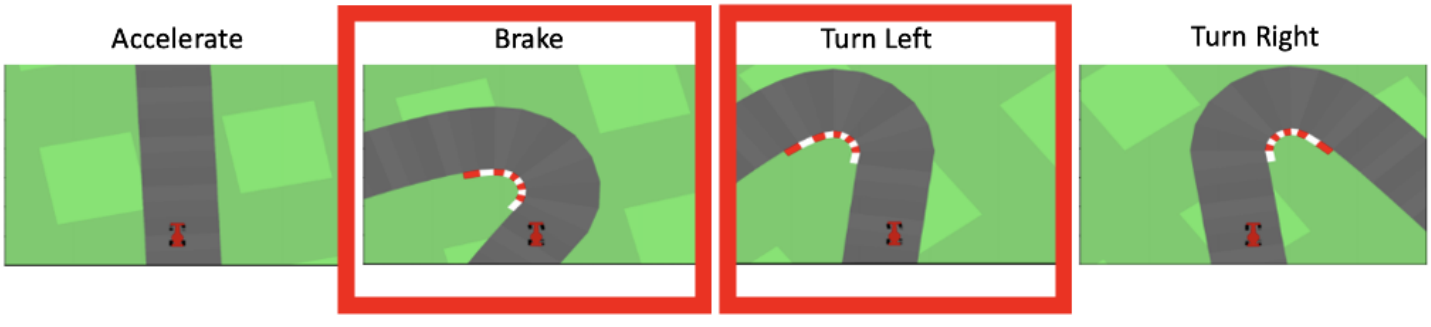
As another example, here the situation is visually similar to the concepts **”Brake”** and **“Turn Left”.**

So the car is likely going to ***turn left, brake***, and drive safely.

Situation



Concepts



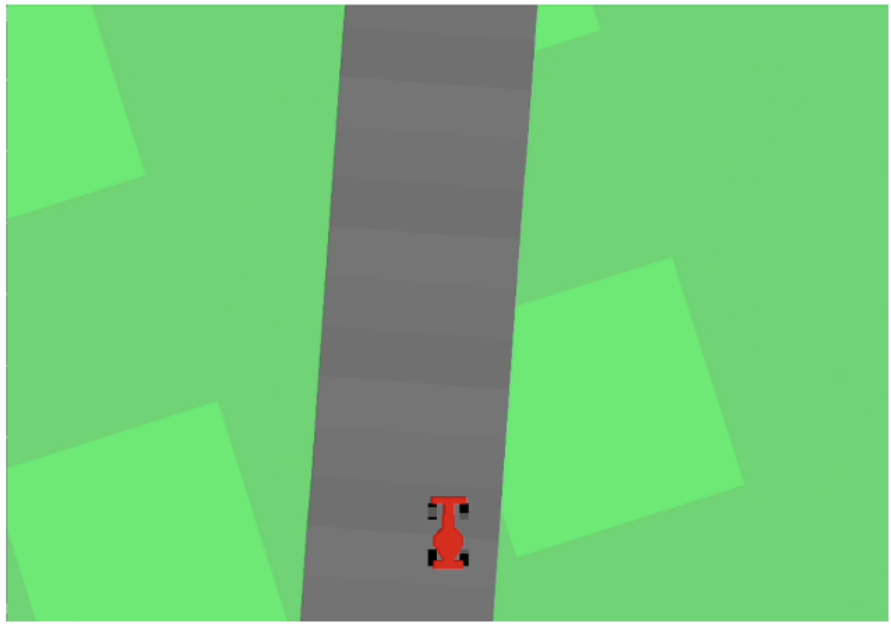
Example 4

Example

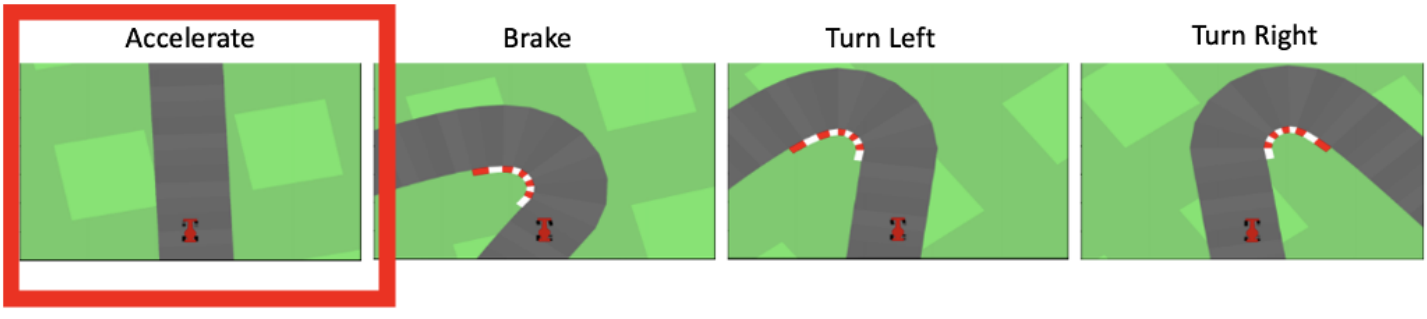
Lastly, here the situation is visually similar to the concept **"Accelerate".**

So the car is likely going to ***accelerate and drive safe.***

Situation



Concepts



Block 52

Introduction

It is up to you to look at the current situation, and guess ***what actions*** the car is going to take.

Your Task

Your Task!

However, ***even if*** the car has learned to drive well, ***it cannot drive safely when it encounters situations which are EXTREMELY different to the concepts it has***

learned.

It is up to you to decide if this is happening.

So, there are ***two main*** things you want to consider when predicting ***if the car will crash***:

1. Is the actions the car is going to take safe in the situation?
2. Is the current situation so different to the ***learned concepts*** that the car has no idea what to do?

Title

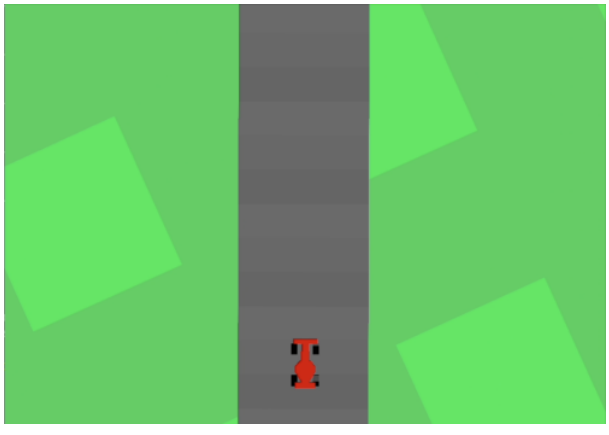
Press Next For The Task Instructions

Instructions 1

Instructions

Initially, note the car's situation and the road ahead it must try to navigate safely.

Step 1: Note the Situation



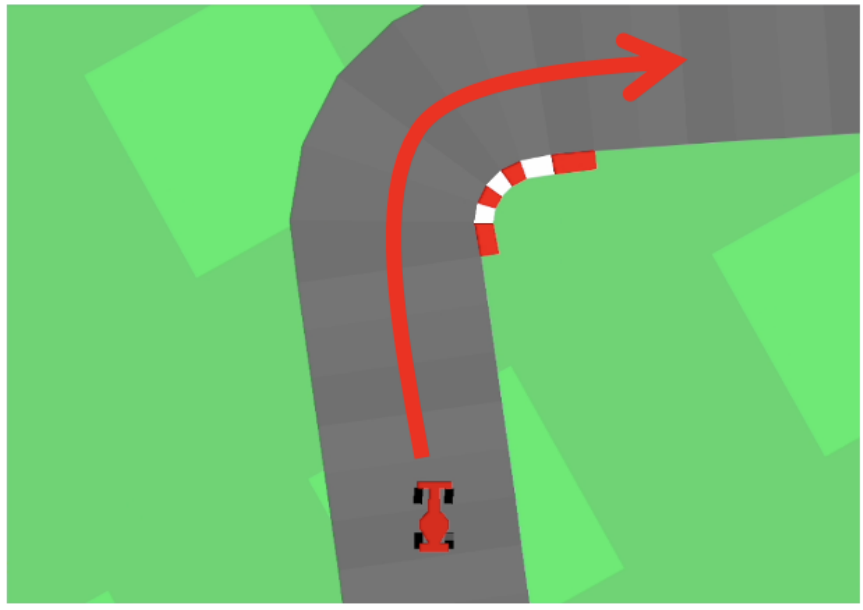
Example 2

Example

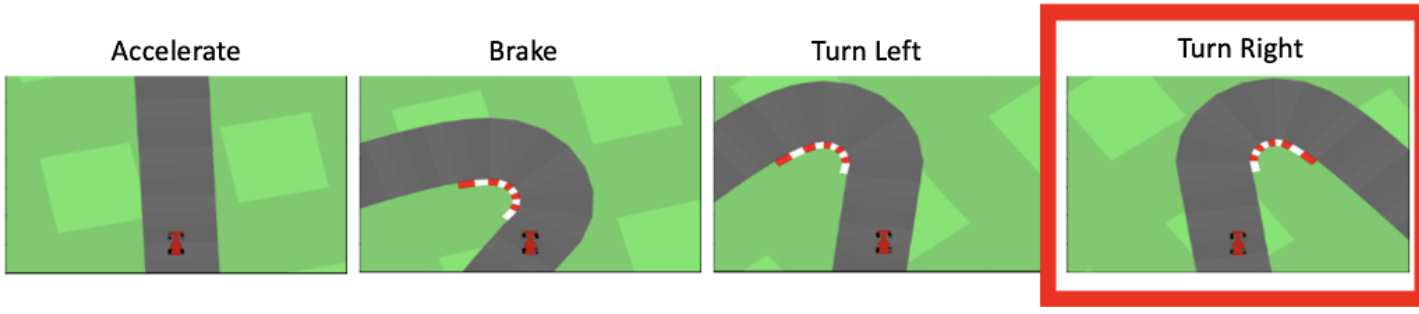
So, for example, here the situation is ***visually similar*** to the concept ”Turn Right”.

So the car is likely going to ***turn right*** and avoid crashing.

Situation



Concepts

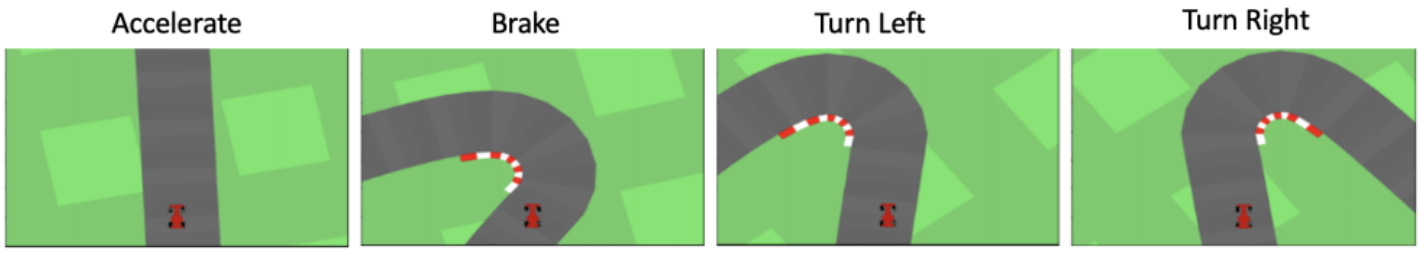


Instructions 2

Instructions

Secondly, recall the learned concepts (these will NEVER change).

Step 2: Recall the car’s learned concepts



Instructions 3

Instructions

Lastly, ***predict if the car will drive safely*** through the road ahead, ***and your confidence*** in this prediction.

There are **five options** ranging from **"Strongly Disagree"** to **"Strongly Agree"**.

Step 3:

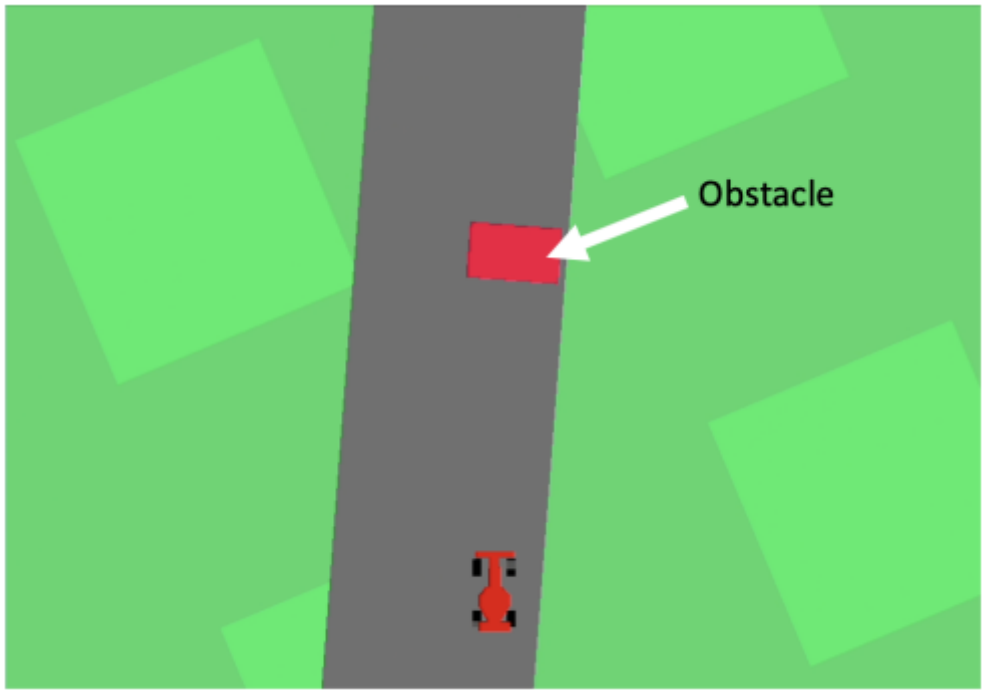
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Red Obstacles

Red Obstacles

Lastly, there are red obstacles scattered throughout the roads

If the car crashes into these it will ***not drive safely***.



Block 50

Remember, you are trying to predict what the *computer program* is going to do here while driving the car!!!

You are *NOT* trying to convey how *you would personally* drive.

Sample question title

Sample Question

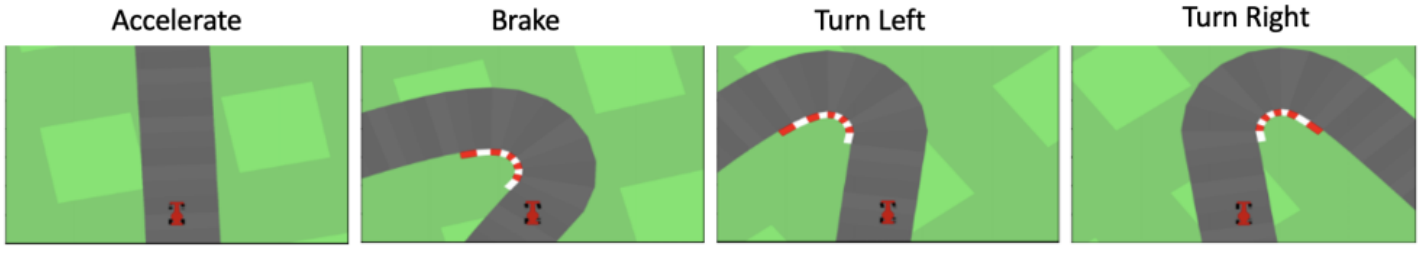
Now, please practice on the next question.

Practice Question

Practice Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Please... consider answers... carfully

Please only participate in this study if you understand the instructions and are willing to ***consider your answers carefully.***

Click to begin study

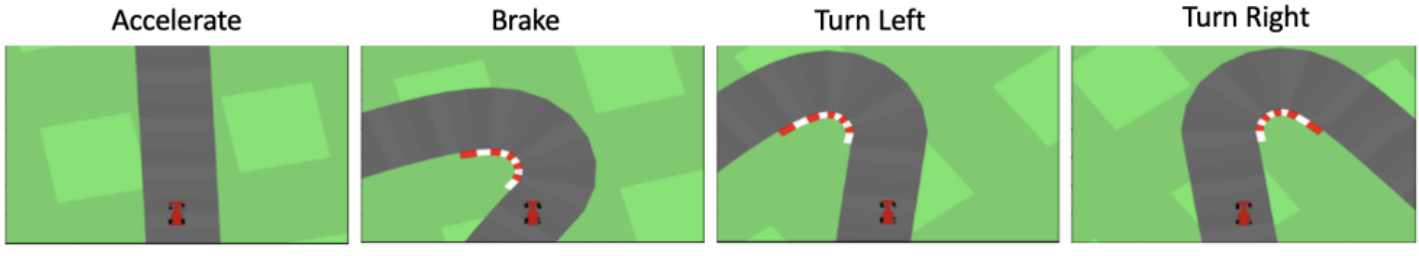
Click Next To Begin The Study

Question 1

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

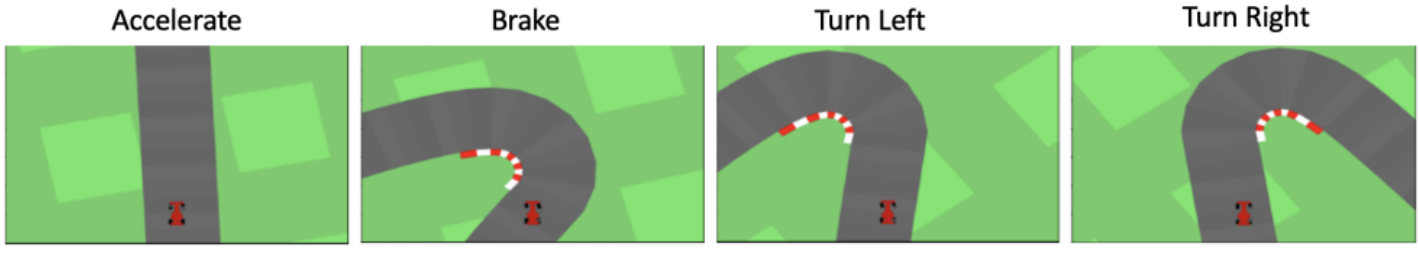
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 3

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

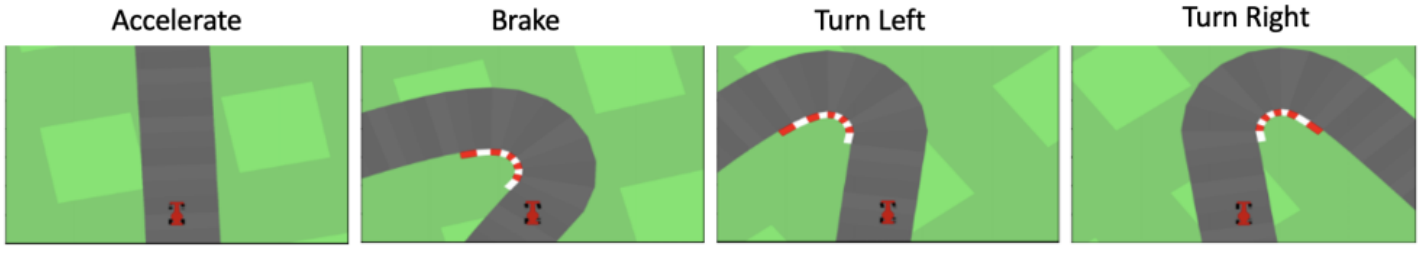
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 5

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

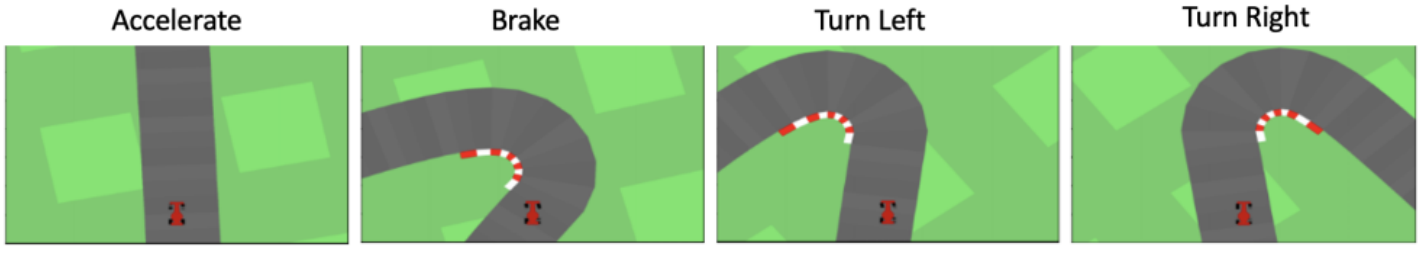
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 7

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

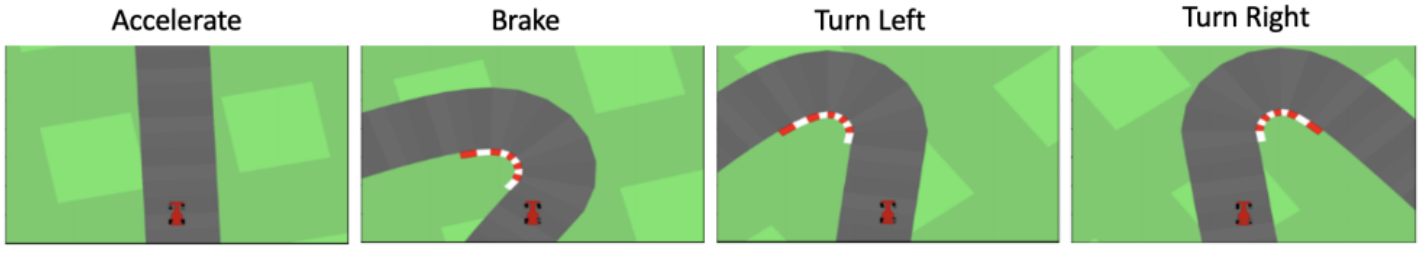
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 9

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

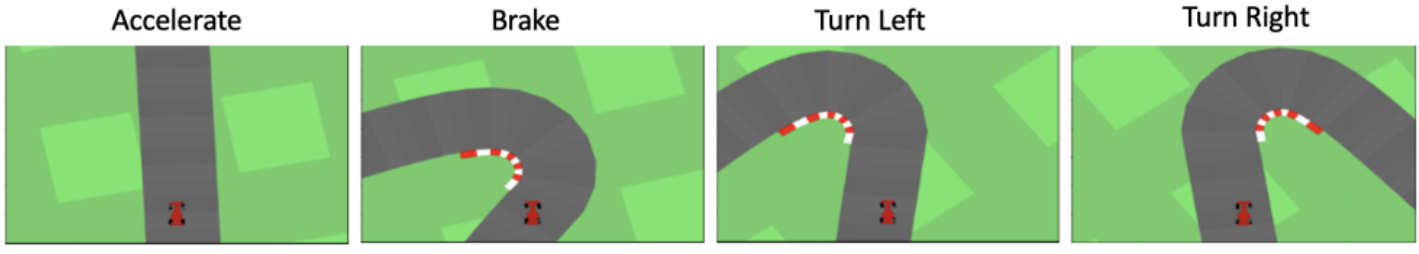
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 11

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

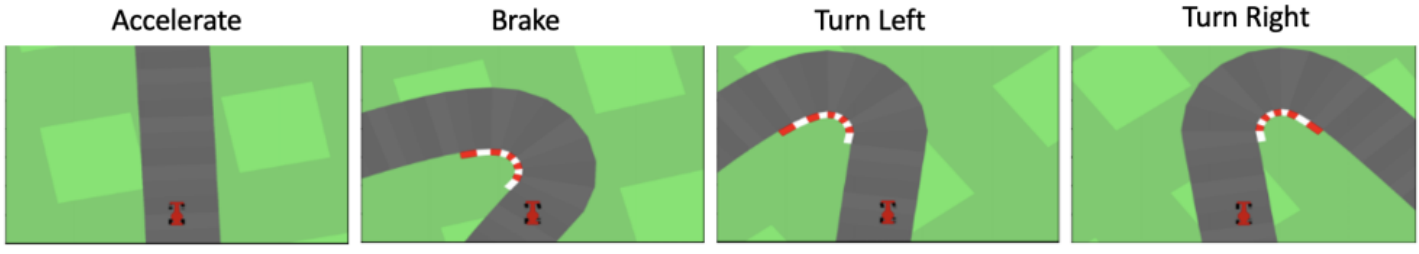
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 13

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

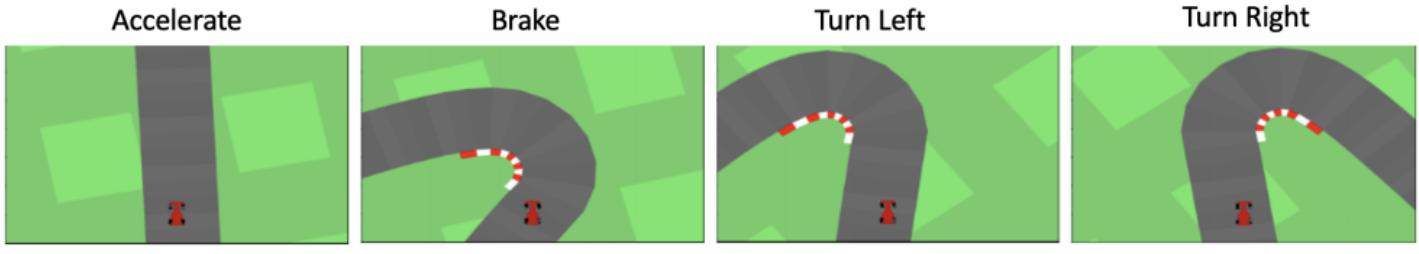
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 15

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

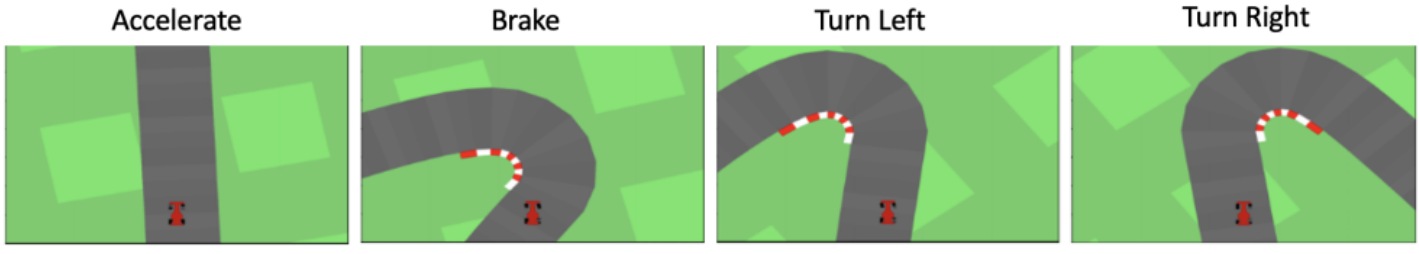
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 17

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

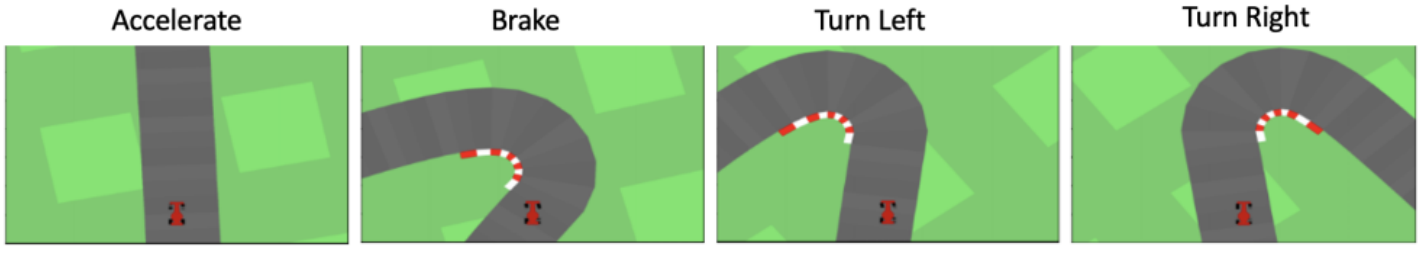
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 19

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

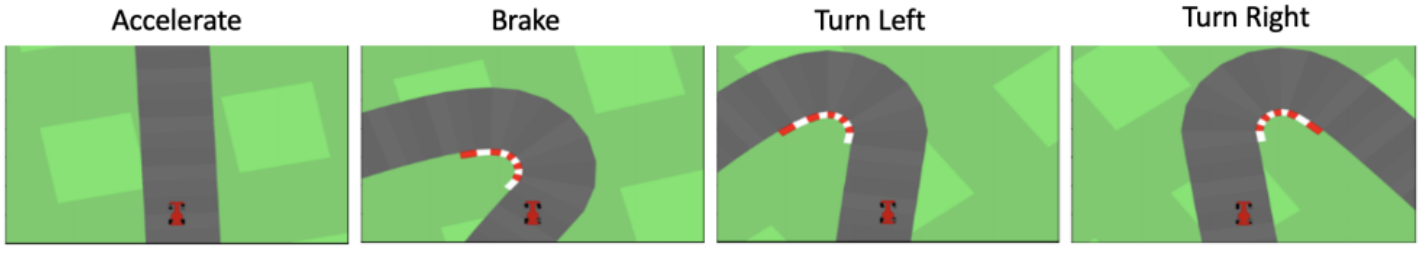
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Attention Check

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

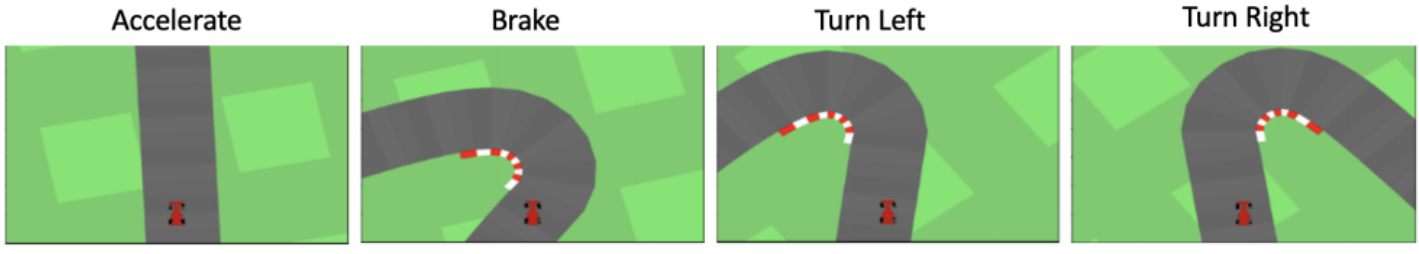
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 2

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

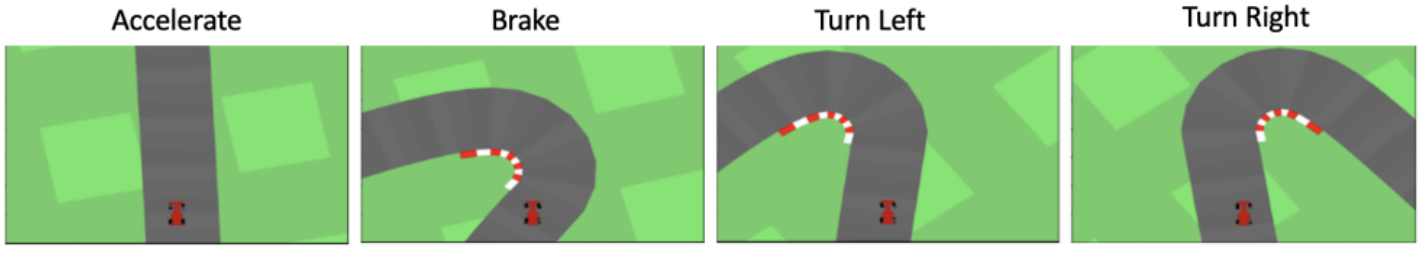
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 4

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

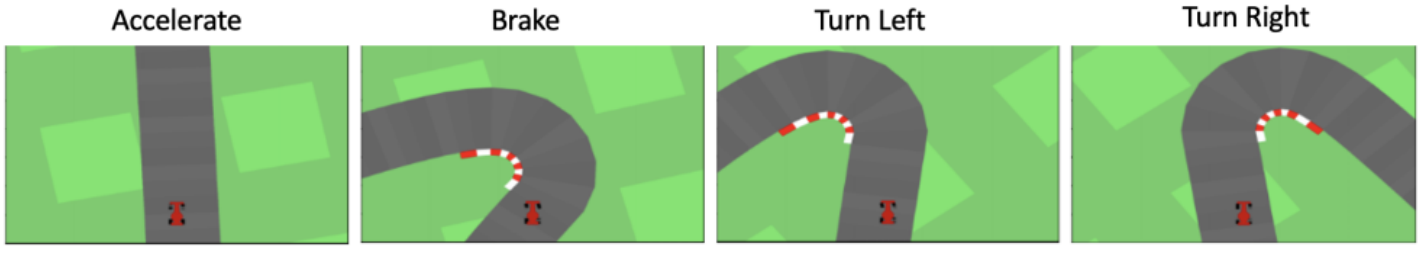
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 6

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

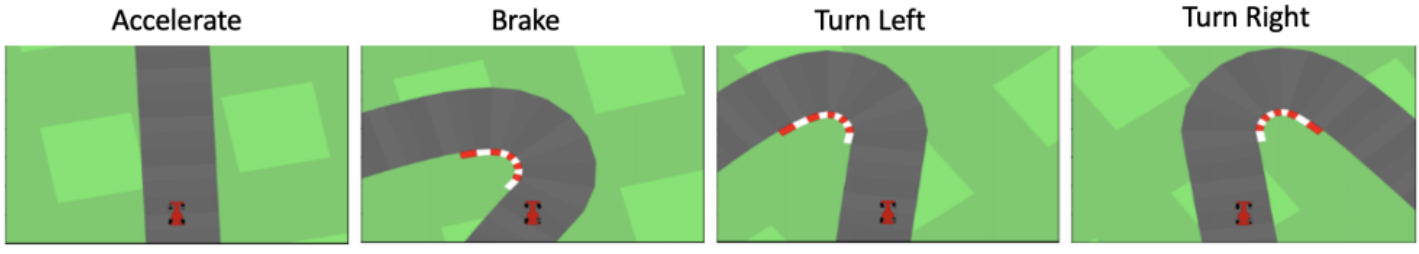
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 8

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

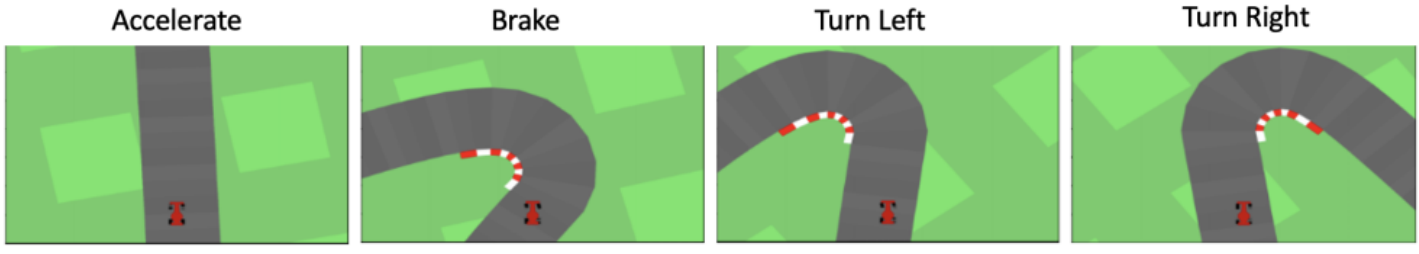
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 10

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

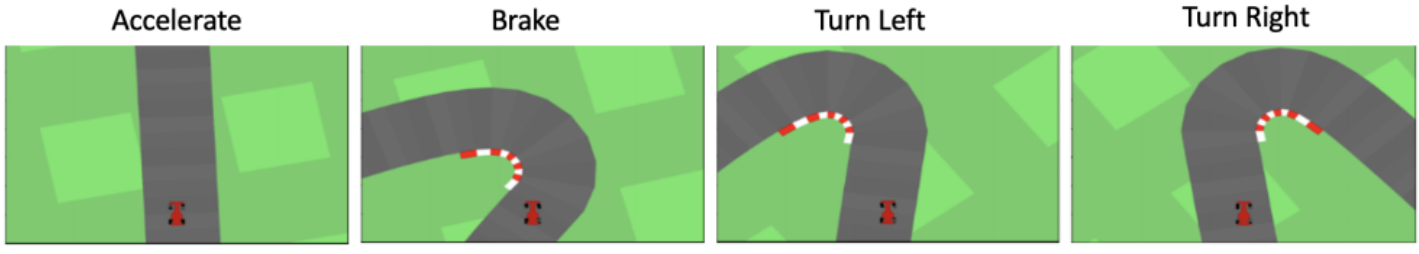
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 12

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

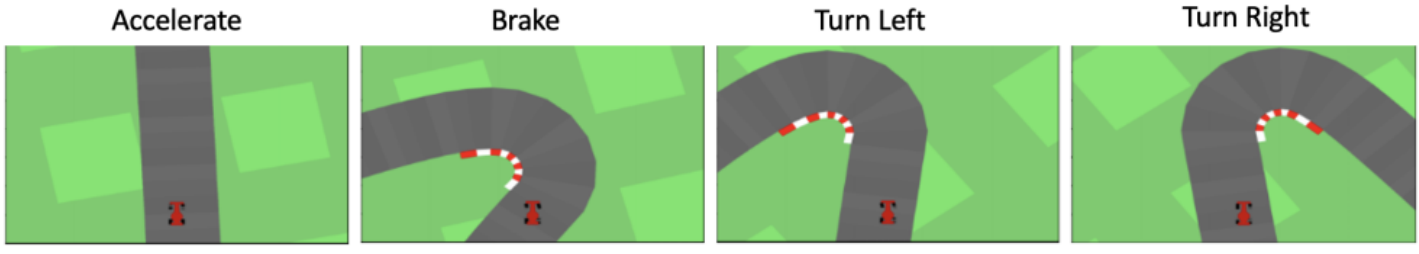
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 14

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

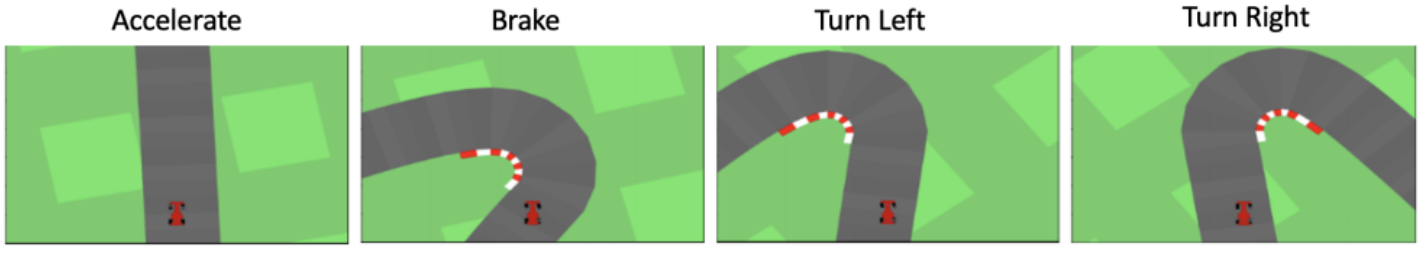
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 16

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

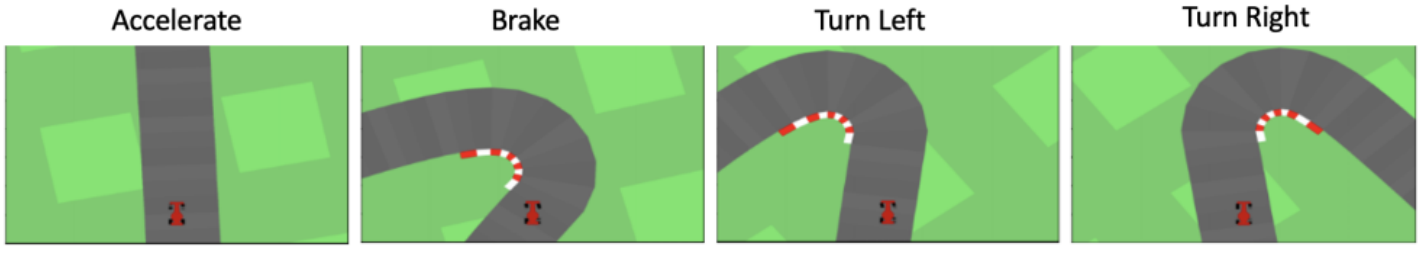
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 18

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

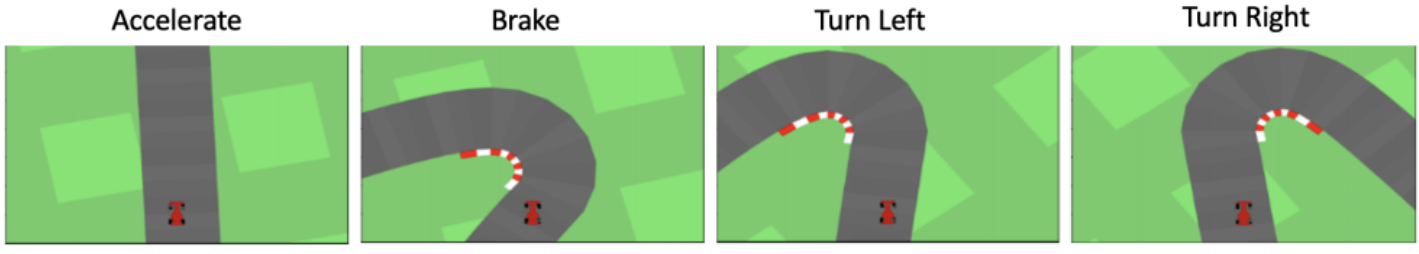
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

Question 20

Question

Step 1: Note the Situation

Step 2: Recall the car's learned concepts



Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	○	○	○	○	○
I am confident in this prediction	○	○	○	○	○

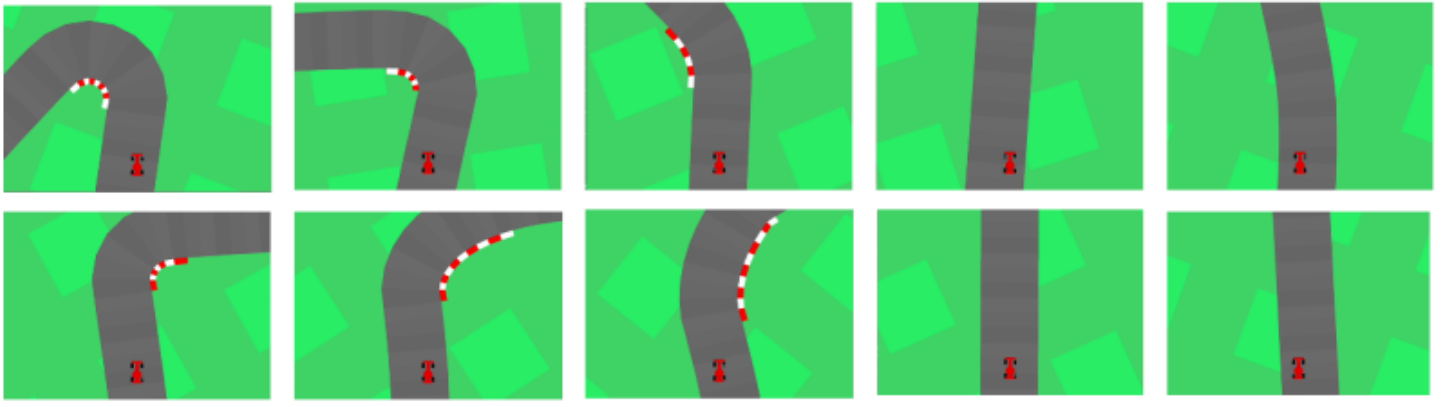
Title safe situations

Thank You For Your Participation!

You Will Now Be Shown Where the Car Drove Safely

Safe situations

The Car Drove ***Safely*** In These Situations

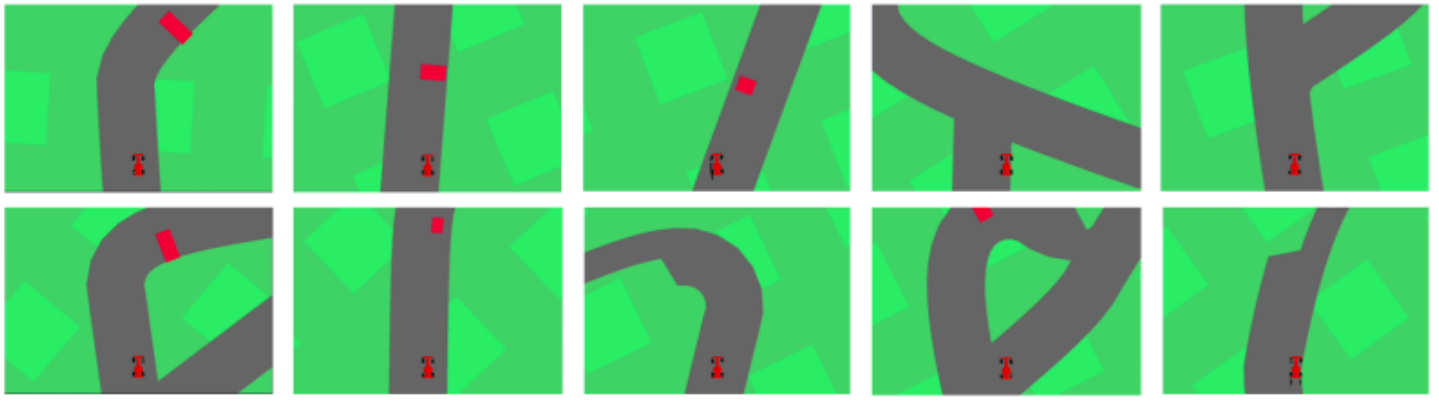


Title crash situations

Click Next To See The Situations The Car Crashed

Crash situations

The Car Did *Not* Drive Safely In These Situations



Please... fill out... 2 surverys... to finish

Next, Please Fill Out Two Short Questionnaires

SUS Questions

Questionnaire 1: The "System" in these questions is referring to the **car** and **explanation**.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think that I would like to use this system frequently.	○	○	○	○	○
I found the system unnecessarily complex.	○	○	○	○	○
I thought the system was easy to use.	○	○	○	○	○
I think that I would need the support of a technical person to be able to use this system.	○	○	○	○	○
I found the various functions in this system were well integrated.	○	○	○	○	○
I thought there was too much inconsistency in the system.	○	○	○	○	○
I would imagine that most people would learn to use this system very quickly	○	○	○	○	○
I found the system very cumbersome to use.	○	○	○	○	○
I felt very confident using the system.	○	○	○	○	○
I needed to learn a lot of things before I could get going with this system.	○	○	○	○	○

NASA Questions

Questionnaire 2

Low High

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

	Low																			High
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
How mentally demanding was the task?																					
How physically demanding was the task?																					
How hurried or rushed was the pace of the task?																					
How successful were you in accomplishing what you were asked to do?																					
How hard did ou have to work to accomplish your level of performance?																					
How insecure, discouraged, irritated, stressed, and annoyed were you?																					

Block 51

To finish the survey, can you please explain, in your own words, with as much detail as possible, why you think the car crashed sometimes?

Block 42

Debrief Page

Thank you for your participation, this study was designed to evaluate people’s ability to use an explainable artificial intelligence system to predict system failures.