

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 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

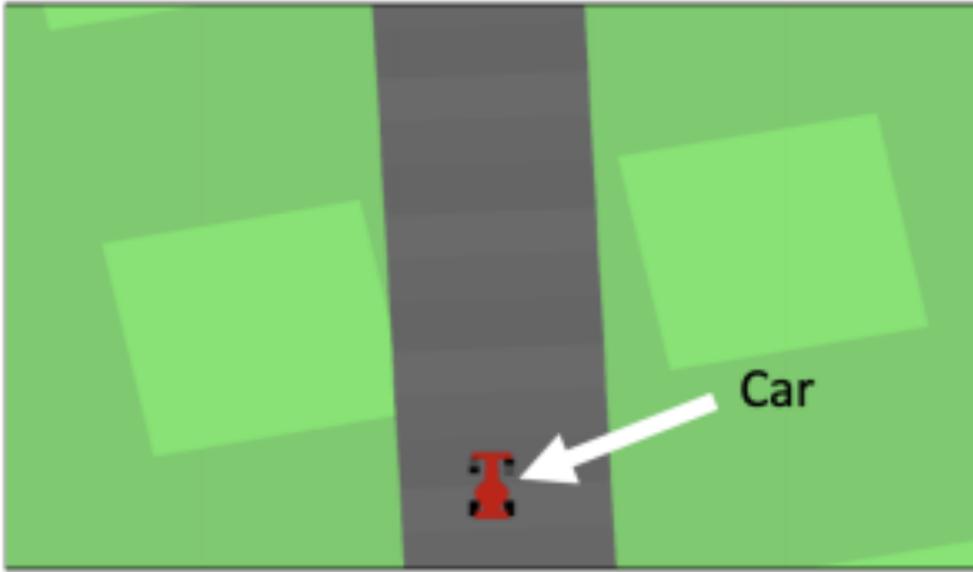
Introduction 1

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

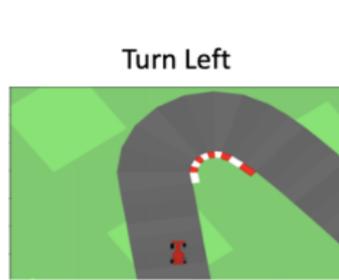
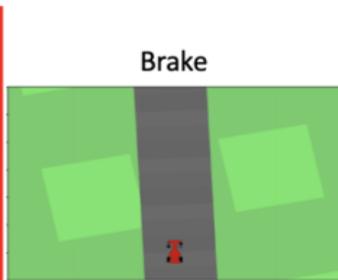
To explain what the car understands by these four concepts, it visualizes them for people using these four images. **Please study them now very carefully** to see if they make sense to you, and if you think the car has learned the concepts correctly.



Introduction acc

Introduction

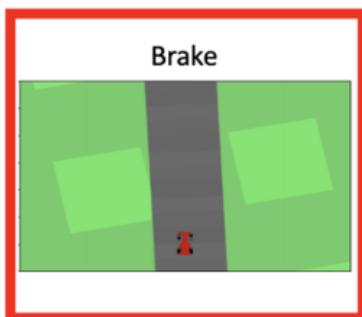
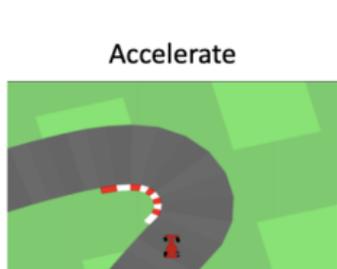
So, the car will take the action **ACCELERATE** in situations it thinks are similar to this.



Introduction brake

Introduction

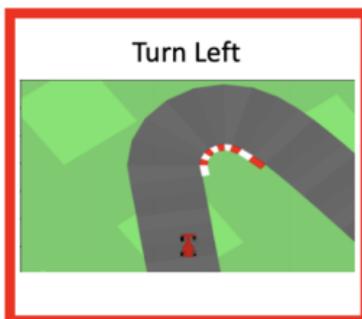
The car will take the action **BRAKE** in situations it thinks are similar to this.



Introduction left

Introduction

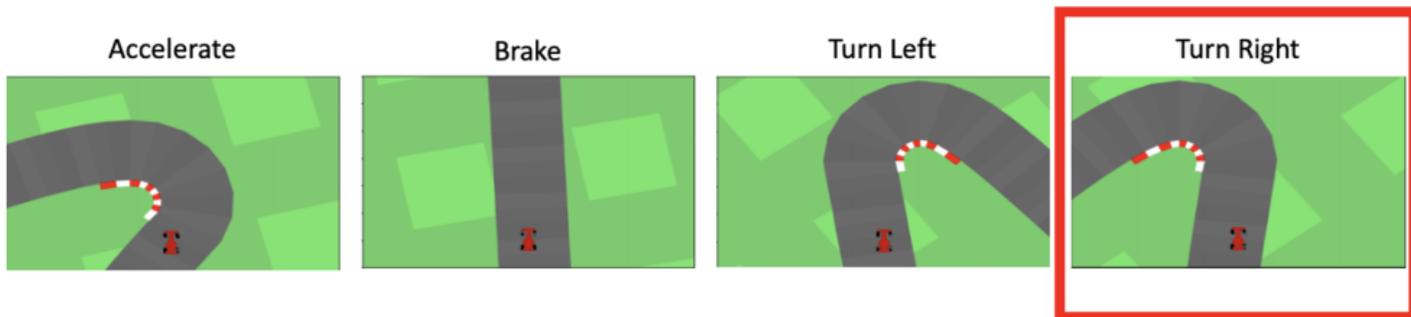
The car will take the action **TURN LEFT** in situations it thinks are similar to this.



Introduction Right

Introduction

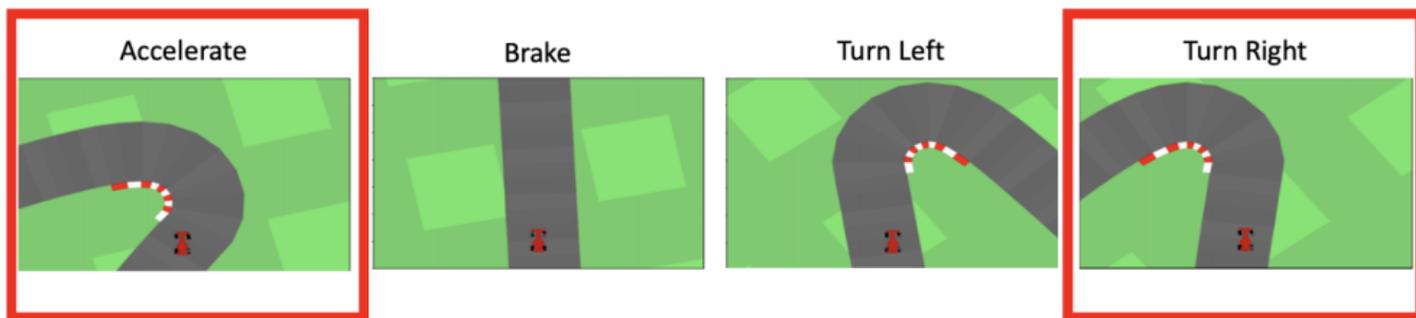
The car will take the action **TURN RIGHT** in situations it thinks are similar to this.



Introduction combine

Introduction

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



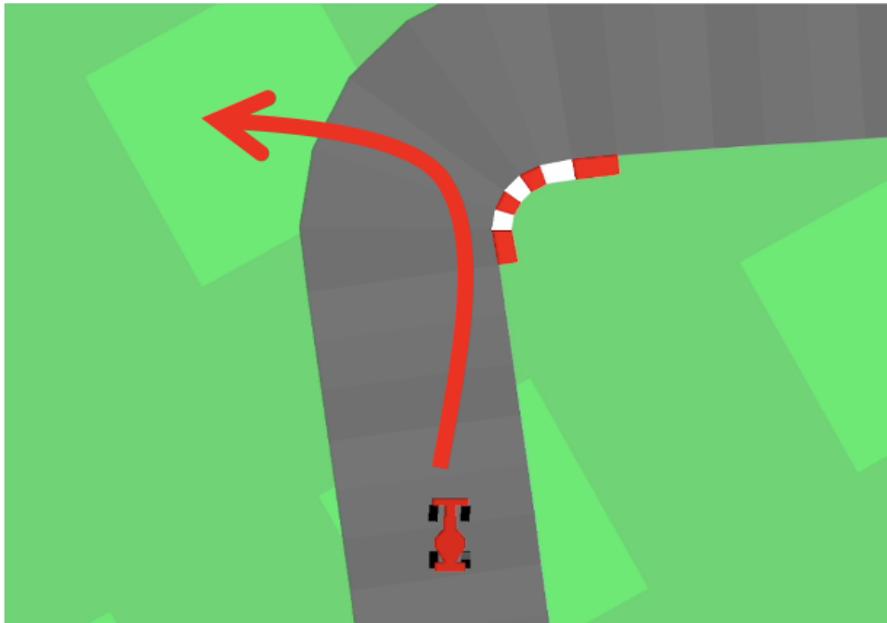
Example 2

Example

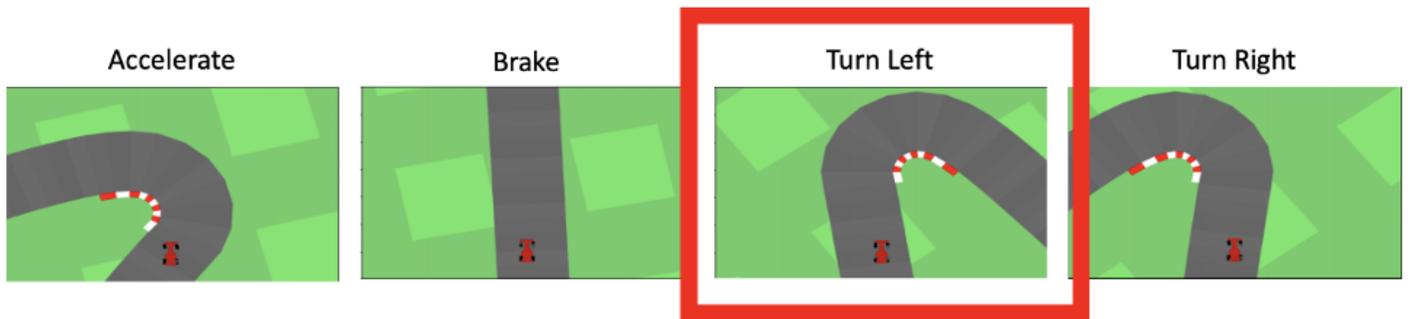
So, for example, here the situation is *visually similar* to the concept "Turn Left".

So the car is likely going to turn left and drive off the road crashing!!!

Situation



Concepts



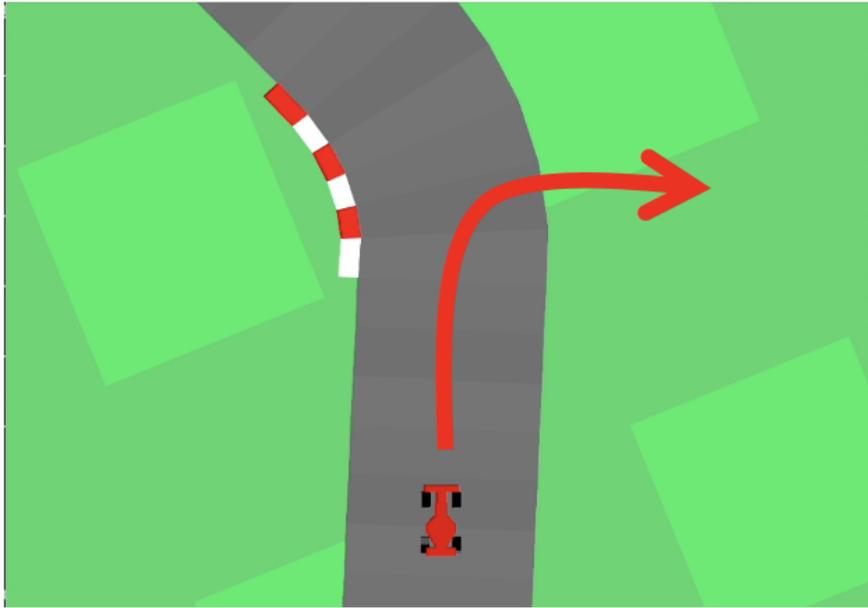
Example 3

Example

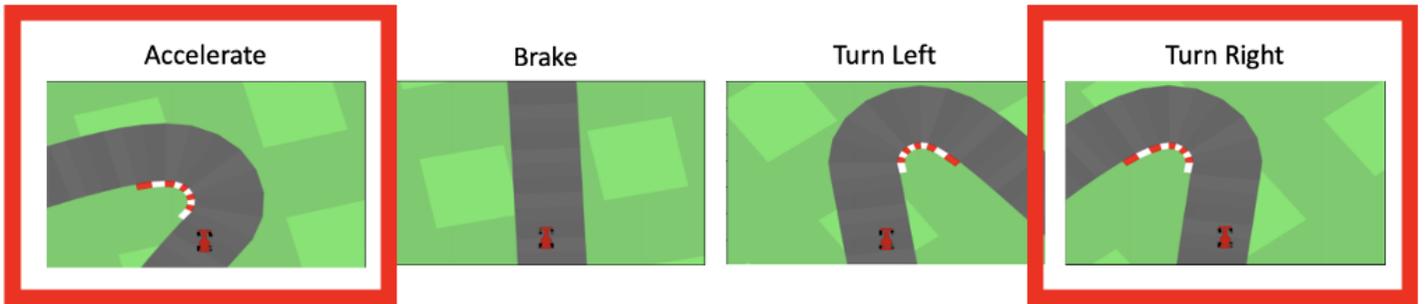
As another example, here the situation is visually similar to the concepts "Accelerate" and "Turn Right".

So the car is likely going to turn right, accelerate, and again drive off the road crashing!!!

Situation



Concepts



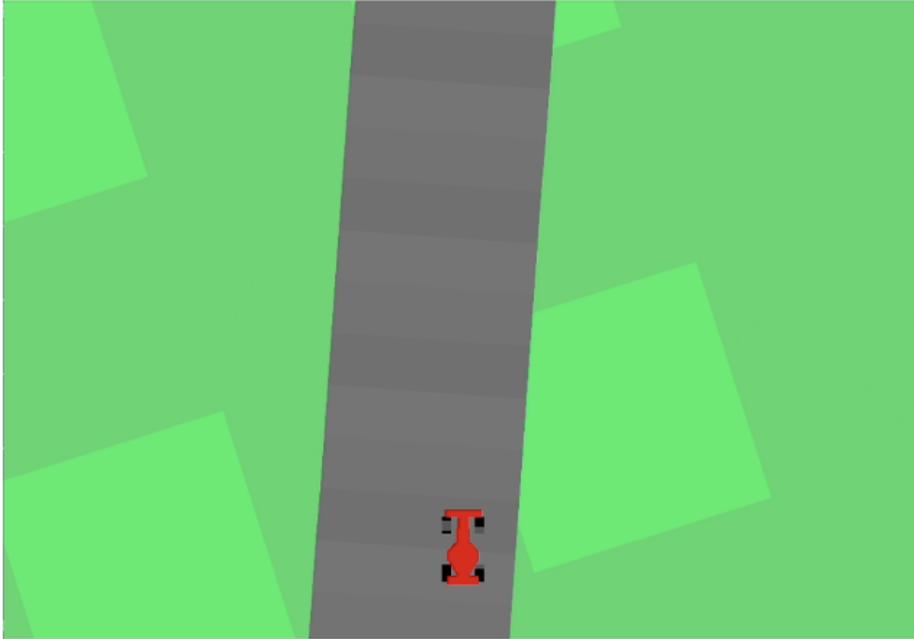
Example 4

Example

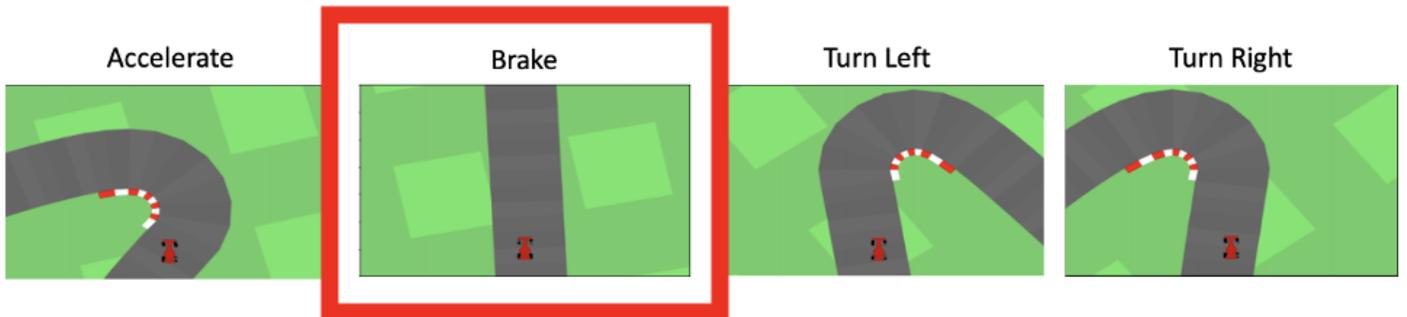
Lastly, here the situation is visually similar to the concept "Brake".

So the car is likely going to ***brake!!!***

Situation



Concepts



Block 51

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. Are the actions the car is going to take safe in the situation?
2. Is the current situation too different to the car's learned concepts that the car has no idea what to do?

Title

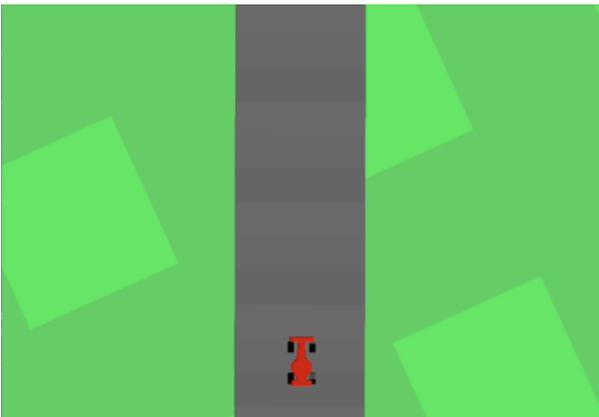
Press Next For The Task Instructions

Instructions 1

Instructions

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

Step 1: Note the Situation



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:

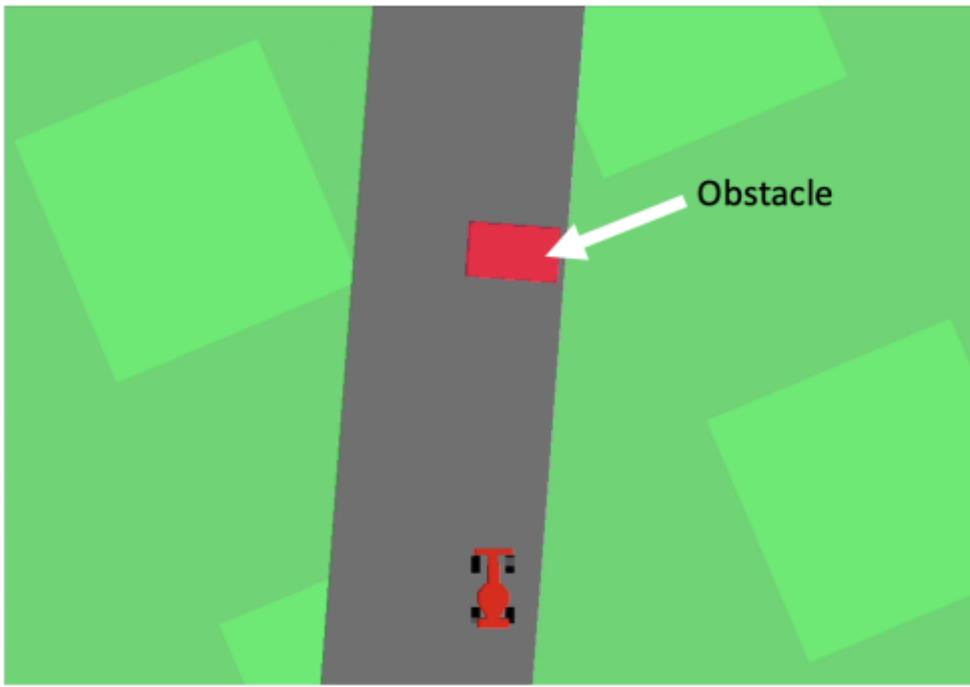
	Strongly Disagree				Strongly agree
The car will drive safely in this situation	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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 51

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Please... consider answers... carefully

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 5

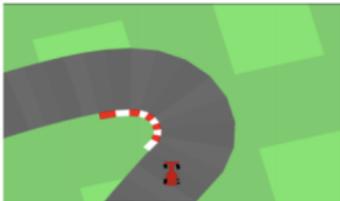
Question

Step 1: Note the Situation

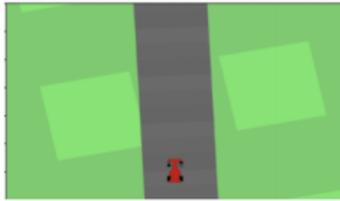


Step 2: Recall the car's learned concepts

Accelerate



Brake



Turn Left



Turn Right



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



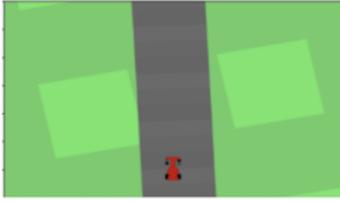
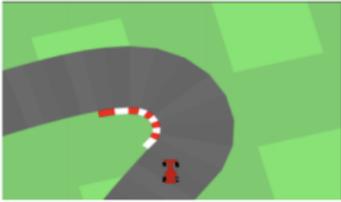
Step 2: Recall the car's learned concepts

Accelerate

Brake

Turn Left

Turn Right



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



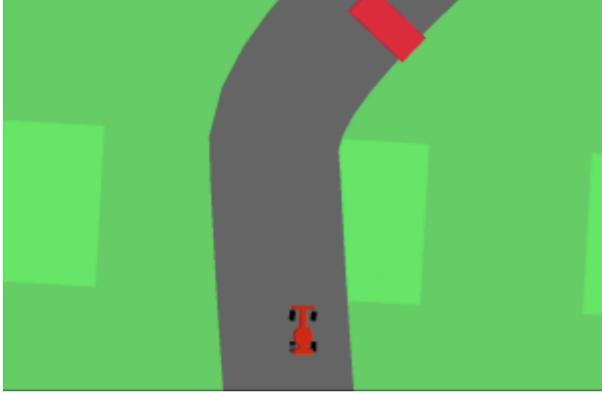
Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>					
I am confident in this prediction	<input type="radio"/>					

Question 15

Question

Step 1: Note the Situation



Step 2: Recall the car's learned concepts



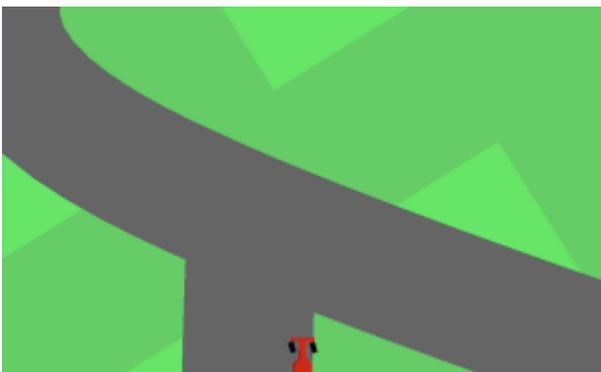
Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 19

Question

Step 1: Note the Situation



Step 2: Recall the car's learned concepts



Step 3:

Strongly Disagree

Strongly agree

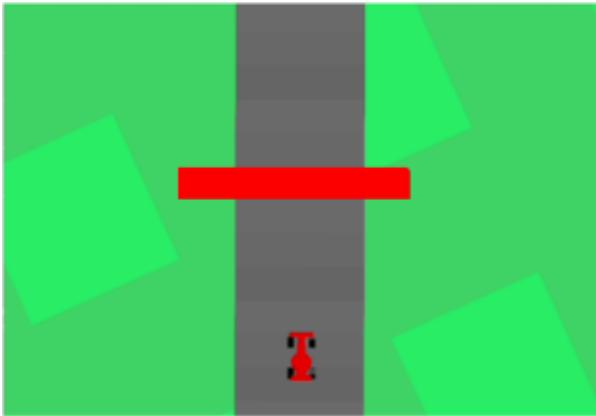
The car will drive safely in this situation

I am confident in this prediction

Attention Check

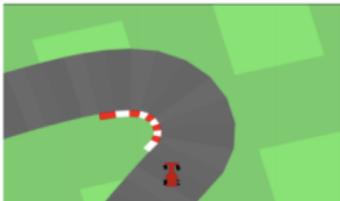
Question

Step 1: Note the Situation

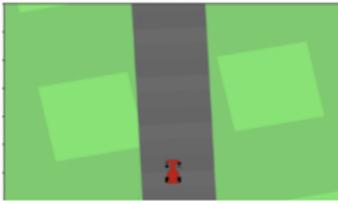


Step 2: Recall the car's learned concepts

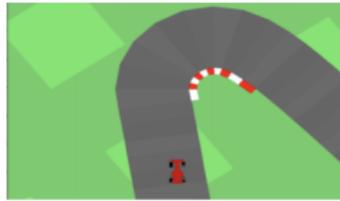
Accelerate



Brake



Turn Left



Turn Right



Step 3:

Strongly Disagree

Strongly agree

The car will drive safely in this situation

I am confident in this prediction

Question

Step 1: Note the Situation

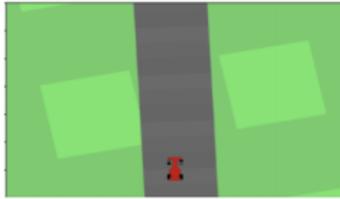


Step 2: Recall the car's learned concepts

Accelerate



Brake



Turn Left



Turn Right



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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 6

Question

Step 1: Note the Situation



Step 2: Recall the car's learned concepts



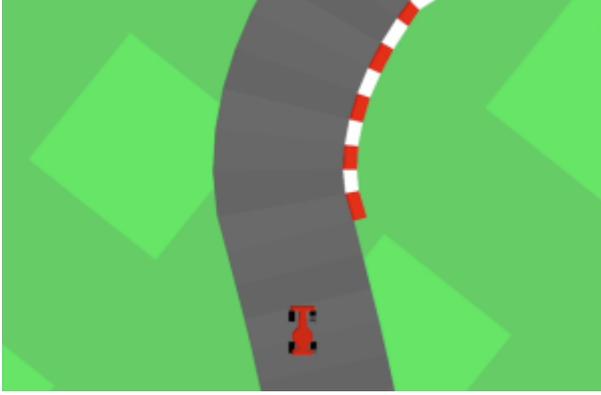
Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 12

Question

Step 1: Note the Situation



Step 2: Recall the car's learned concepts



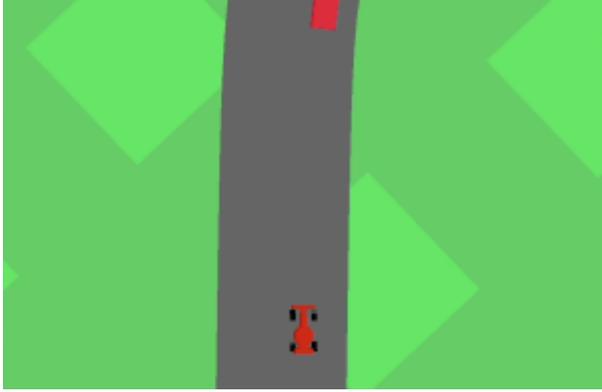
Step 3:

	Strongly Disagree				Strongly agree
The car will drive safely in this situation	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 14

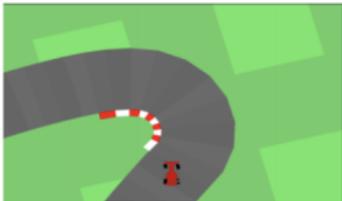
Question

Step 1: Note the Situation

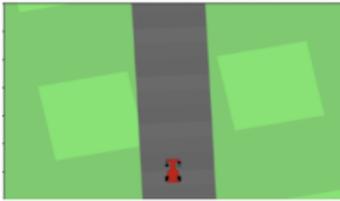


Step 2: Recall the car's learned concepts

Accelerate



Brake



Turn Left



Turn Right



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	<input type="radio"/>				
I am confident in this prediction	<input type="radio"/>				

Question 18

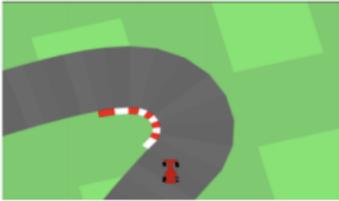
Question

Step 1: Note the Situation

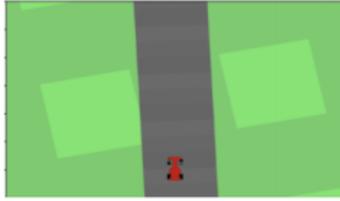


Step 2: Recall the car's learned concepts

Accelerate



Brake



Turn Left



Turn Right



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

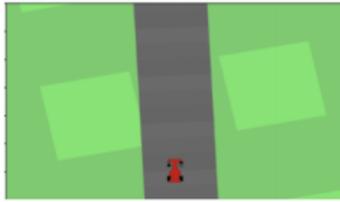


Step 2: Recall the car's learned concepts

Accelerate



Brake



Turn Left



Turn Right



Step 3:

Strongly
Disagree

Strongly
agree

The car will drive safely
in this situation



I am confident in this
prediction



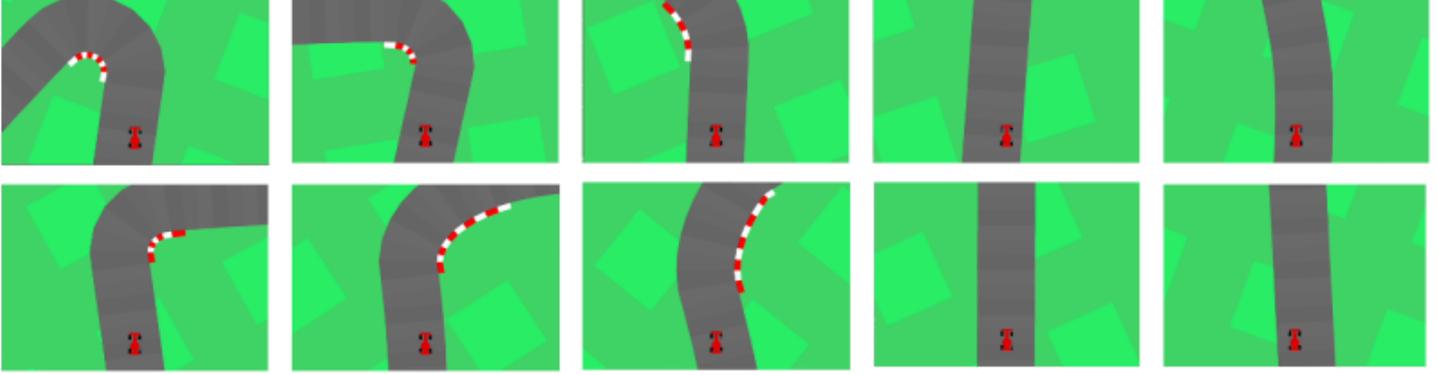
Title safe situations

Thank You For Your Participation!

You Will Now Be Shown Where the Car Drove Safely

Safe situations

The Car Drove Safely In These Situations

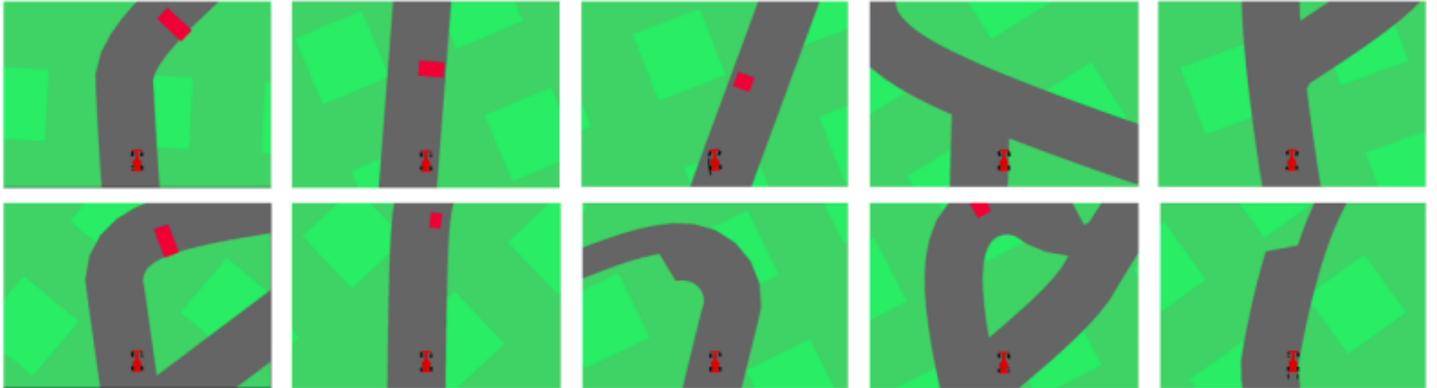


Title crash situations

**Click Next To See The Situations
The Car Crashed**

Crash situations

**The Car Did Not Drive Safely In These
Situations**



Please... fill out... 2 surveys... to finish

**Next, Please Fill Out Two
Short Questionnaires**

SUS Questions

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

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

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 52

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.