Self-Driving Car Game (2-3 Players)

Type: Icebreaker (15-30 mins)

Overview

In this unplugged activity, teams of two or three players act as a self-driving car's control system. Their goal is to move safely step by step, following clear rules to navigate obstacles and pedestrians to reach the finish point.

Each step forward is like a new frame in the car's decision-making process, simulating how an autonomous driving system continuously reassesses its surroundings, and self-driving cars operate through several interconnected sensing and control systems.

Setup

Materials

- A clear space with marked start and end points.
- Markers for obstacles (cones, chairs, pieces of paper).
- Optional pedestrian volunteers.
- Role cards for each team member.

Team Roles (3 Players)

Each team assigns one role per person:

- Sensor & Safety Operator (SS)
  - Observes the next two steps ahead and announces what they see.
  - Call out *"Clear"*, "Obstacle detected", or "Pedestrian ahead".
  - If something unexpected happens, they can shout "Emergency Stop!"
- Decision Maker
  - Listens to the Sensor & Safety Operator's reports.
  - Calls out the movement command: "Step forward", "Turn left", "Turn right", or "Stop".

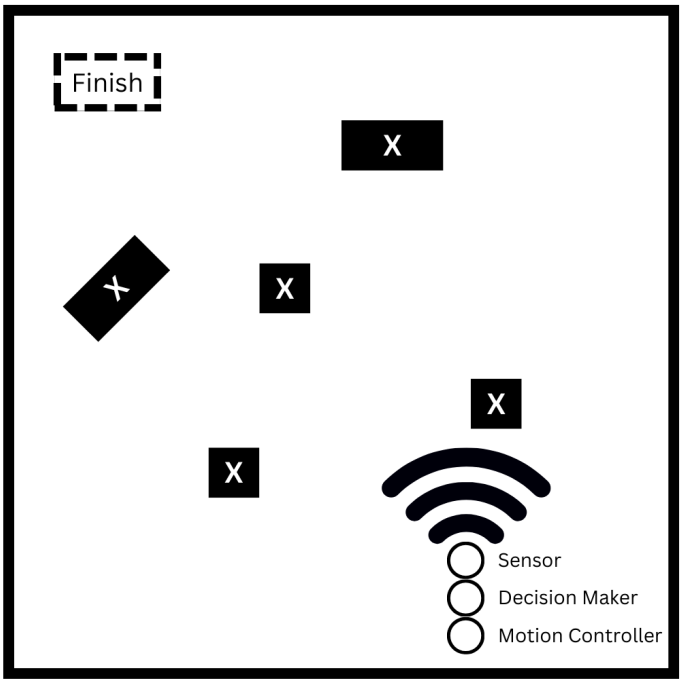
- Motion Controller
    - Follows the Decision Maker's instructions precisely.
    - Takes one step forward when instructed or turns as directed.
    - Keeps the team moving together as a unit.
    - If unsure or confused, can ask for confirmation before moving.

Alternative Pair-Based Version (2 Players) – If Short on Participants

👥 The Sensor & Safety Operator and Decision Maker move together as the "car", ensuring they stay in sync. Remove the Motion Controller role.

How to Play

1. The 'Car' starts at the designated starting spot.
2. The Sensor & Safety Operator looks in the direction of travel (about two steps ahead) and announces one of their options based on what they see.
3. The Decision Maker chooses an action based on that information and calls it out.
4. The Motion Controller follows the command, moving one step at a time and making sure the 'car' moves together.
5. If a new obstacle or pedestrian appears, the Sensor & Safety Operator alerts the team, and the Decision Maker makes a new choice.
6. The team continues step by step, sticking closely together as a unit, until they reach the Finish point.



Keeping the Car Together

- The entire team represents one self-driving car and must move as a single unit.
- If one person moves too fast or lags behind, the "car" is out of sync, simulating what happens when sensors, processors, or actuators in an AI system don't communicate properly.
- Each step forward should be slow and controlled, with everyone staying shoulder to shoulder to mimic the tight coordination in a real vehicle.
- If a turn is called, everyone turns together, keeping the same formation, always facing forwards in the direction of travel.

Gameplay Example

1. Sensor & Safety Operator: "Clear ahead!"
2. Decision Maker: "Step forward!"
3. Entire team takes one step forward together.
4. Sensor & Safety Operator: "Obstacle two steps ahead!"
5. Decision Maker: "Turn right!"
6. Entire team pivots right and waits for the next command.
7. If a pedestrian suddenly moves in front, the Sensor & Safety Operator yells "Emergency Stop!" and the team pauses to reassess.

Extension Activity: Traffic Light Challenge

Once teams have mastered the basic self-driving car simulation, introduce the Traffic Light Challenge to add an extra layer of complexity.

Setup:

- Select one player (or a facilitator) to act as the Traffic Light Operator.
- Provide them with red and green signal cards.
- Mark one or more intersections on the course using tape or cones.

How It Works:

- The Traffic Light Operator controls movement at intersections, deciding when the "car" can proceed.
- The self-driving car team must follow traffic rules and wait at red lights before moving.
- The Traffic Light Operator can introduce unexpected obstacles, such as:
    - A pedestrian suddenly crossing.
    - A blocked lane requiring a detour.

Debrief & Reflection

- How well did your team stay together?
- What made it tricky to keep the vehicle moving in the right direction?
- What strategies did your team develop to move smoothly?
- What strategies helped the team react to sudden changes?
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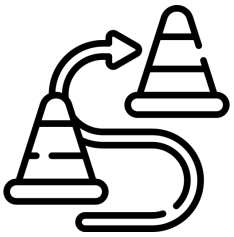
- How does this reflect how self-driving cars rely on coordinated systems?

Printable role cards

Sensor & Safety Operator (Sees the road ahead)

		
“Clear ahead!”	“Obstacle detected!”	“Emergency stop!”

Decision Maker (Chooses the next move)

			
“Step Forward!”	“Turn Right!”	“Turn Left!”	“Stop!”

Motion Controller (Keeps the car moving as a unit)

		
“Stay Together!”	Ask Decision Maker	“Hold Position!”

Printable role cards

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	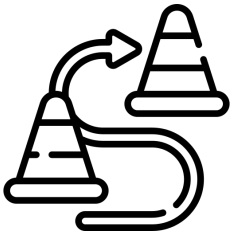	
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