Completion Progress

Your Tasks

In this study, you will help us explore how autonomous vehicles (AVs) can communicate effectively with people. **Your tasks will include answering questions and sketching your own design ideas**. Your contribution could play a valuable role in shaping future recommendations for communication interface designs.

Let's start with a few background questions.

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How old are you? *

0

What is your gender? *

Female Male Non-binary Prefer not to say Other (describe)

What is your primary mode of transportation? *

Private vehicle (car, van, etc.) Public transportation (bus, train, etc.) Motorcycle

Walking/Cycling Other I prefer not to respond

Have you ever had any interaction with a self-driving vechile(e.g., crossing its path, riding in one, or communicating with it)? *

No Yes I'm not sure

I plan to use self-driving vehicles when they become available. *

Strongly Disagree Disagree Neutral Agree Strongly Agree

Continue

Completion Progress

Communication with Autonomous Vehicles

Autonomous Vehicles (AV) are vehicles that can operate with little to no human input. As AVs become part of everyday life, it's essential for all road users —pedestrians, drivers, cyclists, and others— to understand and interact with them effectively, much like how people currently engage with human drivers.

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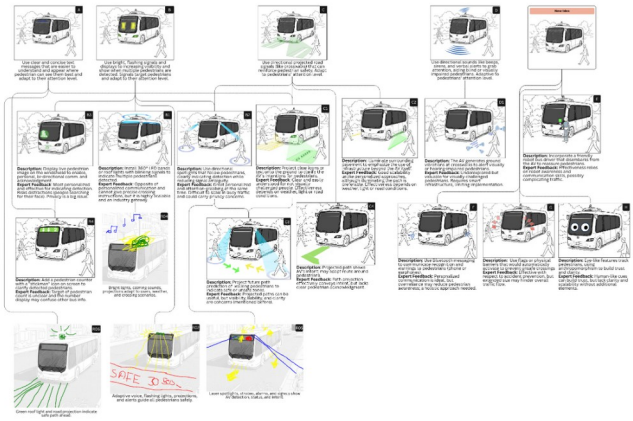
Detecting Pedestrians in a High-Risk Scenario

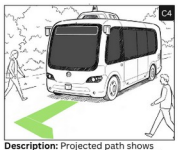
In a previous study, participants sketched how AVs might communicate with road users in different risk scenarios. We grouped these sketches into key concepts shown in the top layer of the visualization tree below. New participants then viewed these concepts, submitted additional sketches with suggested improvements, creating new branches in the tree. (If you don't see any branches, you are starting a new iteration! :))



Continue >

Shown 5 times:

Completion Progress



Description: Projected path shows AV's intent; may adapt route around pedestrians.

How creative is the idea behind this submitted interface (focus on the idea, not the drawing skills)?

1 - Not original at all | 2 | 3 | 4 | 5 | 6 | 7 - Extremely original

Continue

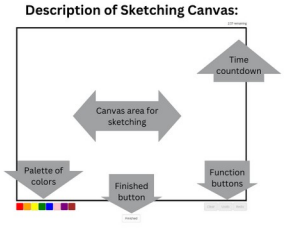
Completion Progress

Task: Sketch Modifications, Improvements or New Ideas

Your task is to be creative. You will sketch your own idea for a communication interface for an autonomous vehicle, based on other participants' ideas. You can **add new elements, combine existing ones, or create a design from scratch**. Your interface should clearly show **how an AV detects and recognizes a pedestrian's intentions.**

The image below highlights the key elements of the sketching canvas you will use.

Description of Sketching Canvas:



Continue >

Completion Progress

Low-risk Scenario

Before sketching, consider a **low-risk scenario**: You are a pedestrian about to cross a street with **clear visibility, minimal traffic, and well-marked signals**. In this situation, what elements or features would you like to see in an AV's interface? How would you like the AV to communicate with you?
Please write a short answer below:

This answer will be used as an attention check.

Continue

Completion Progress

High-risk Scenario

Now, think about a **high-risk scenario:** You are a pedestrian in a **busy urban area with limited visibility, no clear traffic infrastructure, and the presence of vulnerable pedestrians (e.g., children)**. Consider the following questions:

- What should the AV do if a parent with a stroller steps off the curb in heavy rain?
- How should the AV respond if a cyclist dismounts to cross in the rain?
- What if two kids on opposite sides step toward the street in heavy rain?
- How might an AV adjust signals for children or older adults?
- How could motion or lights help the AV grab attention from any angle?
- How can an AV get a distracted pedestrian's attention without using sound?
- How can an AV show it sees multiple pedestrians at once?

How would you like to update your design?
Please write a short answer below:

This answer will be used as an attention check.

Continue

Completion Progress

Task: Sketch Your Idea on a High-risk Scenario

On the next page, you will choose a previous design to update or you can create a new design from scratch. **Sketch your ideas based on the reflection of a high-risk scenario**.

Be creative! Think about how you would envision the near future, for example:

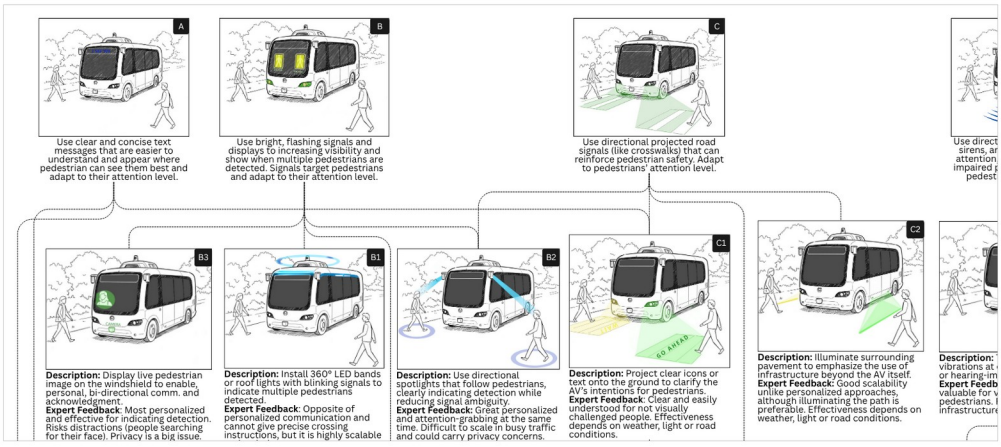
- Light robotic arms could guide traffic when needed.
- AVs could slightly change shape to signal their next move.
- Traffic lights could talk to AVs for smoother crossings.
- Smart canes could tell visually impaired people when to cross safely.
- Nearby AVs could share info to help each other.
- Phones and smartwatches could alert AVs to pedestrians.
- Pedestrians could wave, and AVs would recognize it.
- Sidewalks could light up or vibrate when safe to cross.

Continue

Completion Progress

Task: Sketch modifications or improvements

Please select one design you would like to improve, modify, or combine with another idea. If you prefer, you may also choose to create a new design from scratch. (**Zoom-in** to start interacting with the image).



Zoom In | Zoom Out | Reset Zoom

Select action: --Please choose an option--

Continue

Completion Progress

Task: Sketch your idea for an AV interface.

Sketch how an AV can clearly show that the AV has **detected and understands a pedestrian's intentions**.

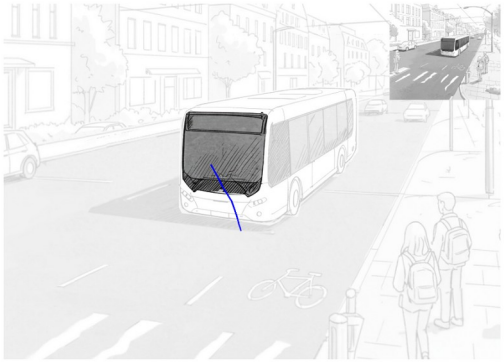
Selected Images for Reference

Use clear and concise text messages that are easier to understand and appear where pedestrian can see them best and adapt to their attention level.

Clear Undo Redo

Finished

Completion Progress



Please briefly explain your design:

What new elements did you include or modified?
What motivated the changes you made?

This answer will be used as an attention check.

Continue

Completion Progress

Exit Survey

Would you like to take part in a similar study in the future?

- ○ Yes
- ○ No
- ○ Maybe

If you have feedback or comments on the study, please write them below:

Your comments here...

Finish