

The Molly Problem

Public Survey Results (preliminary)



Sample dates: 11-20th October 2020

The Molly Problem was created by ADA to provide insight on the public expectations for safety critical ethics, behaviour and explainability for AI software used for self-driving vehicles.

This survey was conducted in collaboration with the Technical University of Munich as part of the ITU Focus Group on AI for Autonomous and Assisted Driving (FG-AI4AD) and the AI for Good Global Summit Webinar Series.

For more details please follow the link below;

<https://www.itu.int/en/ITU-T/focusgroups/ai4ad/Pages/MollyProblem.aspx>

The Molly Problem: Background

These preliminary survey results are based upon responses obtained between 11-20th October 2020 from 296 respondents (70% male, 25% female);

Aged between 18 and 73 yrs (mean age of 41 yrs)

Living in rural, city, suburban but mainly urban environments

94% hold a drivers license

Three quarters of respondents were *excited* and *willing* to travel in an automated vehicle.

The Molly Problem: Survey Respondents

A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle.

There are no eye-witnesses.

The Molly Problem for Self-Driving Vehicles

What should happen next?

Respondents have clear expectations for the capability and behaviour of the self-driving software in the case of a pedestrian collision event.

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses.

97%

expect the software to be aware of the collision

2% unsure & 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

94%

expect the software to stop at the collision site

4% unsure & 2% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

97%

expect the software to indicate a hazard to other road users

2% unsure & 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

94%

expect the software to alert emergency services

5% unsure & 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

What should happen next?

In addition to post-collision behaviour respondents were asked about the information recall capabilities of the self-driving software.

The overwhelming majority had strong and clear expectations for the development of explainable AI for self-driving software.

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses.

99%

expect the software to recall the time of the collision

1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

99%

expect the software to recall the location of the collision

1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

93%

expect the software to recall when the collision risk was identified

6% unsure 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

96%

expect the software to recall *if* Molly was detected

3% unsure 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

96%

expect the software to recall when Molly was detected

2% unsure 2% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

91%

expect the software to recall *if* Molly was detected as a human

6% unsure 3% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

90%

expect the software to recall when Molly was detected as a human

7% unsure 3% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

98%

expect the software to recall whether mitigating action was taken

1% unsure 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

97%

expect the software to recall when mitigating action was taken

2% unsure 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

96%

expect the software to recall what mitigating action was taken

3% unsure 1% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

What should happen next?

Having indicated the preference for information recall, respondents were then asked to consider two extension scenarios;

- Should recall capabilities be available for *near-miss events*?
- What should happen if *recall capability is unavailable*?

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses.

88%

expect similar recall abilities for near-miss events

5% unsure 7% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

73%

expect driving to be prohibited for software without recall capability

15% unsure 12% don't

The Molly Problem: A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle. There are no eye-witnesses. What should happen next?

The Molly Problem preliminary survey results set clear public expectations for ethical post-collision behaviour and support for the adoption of explainable AI approaches for self-driving software.

Ten key criteria for explainability were supported with the expectation of their recall capability in both collision and near-miss events.

These findings should be considered by self-driving developers, insurers, standards bodies and regulators. In December 2020 the ITU FG-AI4AD members will decide whether to adopt the ten key criteria as requirements for data standardisation used in both recall and continual monitoring.

The Molly Problem: Preliminary Conclusion



**AI for Autonomous
and Assisted Driving**

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