Experience Breakdown

CS-422 UI Design, Prof Andruid Kerne (Fall 2024)

The 2023 Mini Cooper Countryman was released with a Union Jack tail light design, in honor of the brand's British heritage. The difference in US and UK mandates caused confusion to me when the car light indicates a turn signal an arrow is formed in the opposite direction (Refer Figure 1).

Figure 1 : Turn signal similar to arrows in opposite direction

Breakdown Section

I was driving in the US on a learner's permit. Previously, my driving experience was mainly in India which follows a different taillight mandate. It was amber for turn signals and red was for braking. The lights are separate and easily distinguished. While I was driving, getting accustomed to the left side of the driver seat, I saw the SUV, similar to the image above. The left taillight was blinking with a right-side arrow, and the right taillight was also illuminated. It caused some confusion and I could only perceive the driver's intentions once they turned towards the left. The interface of the rear taillight design on this 2023 Mini Cooper Countryman was mildly frustrating and confusing to me as a novice driver in the US.

The Union Jack taillight design, although aesthetically pleasing, makes it difficult for other drivers to clearly see the brake and turn signals in certain lighting conditions. The Union Jack design can obscure the distinction between the different lights (brake lights, turn signals, and reverse lights) affecting feedback and visibility provided to others. This could lead to some close calls with other drivers who were unsure of the vehicle's intended actions. While it was a cultural gap in understanding which increased my confusion, the ambiguity of the layout added to it.

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To summarize the issues -

Visibility Issues
The Union Jack design lacks the clarity needed for quick recognition of signals, especially in adverse weather conditions.

When looking at the car from an angle (Refer figure 2), where only one tailight is visible, we do not get a clear picture of what is going on. It will be difficult to identify whether the car is slowing down or making a turn.

Figure 2 - Only one taillight visible at a time

Potential Misinterpretation
The unique pattern can cause other drivers to misinterpret the signals, potentially leading to unsafe driving conditions.

Lack of Consistency
The taillight design deviates from the more universally recognized taillight patterns, which generally have simple visibility for safety.

The interaction breakdown occurred due to poor mapping and signifiers in the design. The taillights do not effectively map the action of braking or signaling to a universally recognizable visual output, which causes confusion and delayed reaction time.

<u>Analysis Section</u>

Poor Mapping and Signifiers
Signifiers - Car design elements should clearly indicate the intended function to prevent confusion and improve safety. The Union Jack design does not clearly signify the car's actions to other drivers. In traditional designs, clear areas for brake lights and turn signals help other drivers understand the actions of the vehicle ahead.

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Mapping - The design should be a clear and intuitive connection between signals and the meanings for an accurate interpretation. The mapping in this Countryman car's signals and its visual representation is not intuitive. The use of a complex pattern can confuse drivers who are accustomed to more straightforward taillight designs.

Visibility and Feedback

Feedback - Visual feedback should be clear and consistent to provide unambiguous information to other drivers. The taillight design does not provide sufficient visual feedback in all conditions. In bright sunlight or heavy rain, the Union Jack pattern might not be as easy to identify.

Alternatives Section

Alternative 1: Color separation for easier identification

Design: A revised taillight design that has a hint of the Union Jack but ensures a clearer distinction between brake lights and turn signals. For example, the centrally located brake light is amber (Figure 3) to ensure the signal functions are clearer and intuitive. This design maintains Mini's brand identity while enhancing safety by making brake lights and turn signals immediately recognizable.

Figure 3 - Color differentiation in the Union Jack design

Alternative 2: Dynamic LED Taillights with Adaptive Patterns

Design: A dynamic light segmentation approach where the Union Jack taillight design is split into distinct sections. Each segment is equipped with adaptive LED technology that adjusts brightness based on lighting conditions and weather. For instance, during braking, the brake light segment could brighten while slightly dimming the other sections to reduce visual clutter. Similarly, when signaling a turn, only the dedicated turn signal segments illuminate in amber, creating a distinguishable visual cue.

Both alternatives maintain the unique identity that Mini aims for with the Union Jack pattern but prioritize safety and usability by ensuring that the design follows fundamental principles such as clear signifiers, proper mapping, and consistent feedback.

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