Simulating Next-Generation User Interfaces for Law Enforcement Traffic Stops

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Motivation

The need to integrate new technologies into the routine of traffic stops is an evident concern among law enforcement agents. The successful adoption of novel user interfaces relies on:

- A clear understanding of first responders’ requirements and contexts of use.
- The ability to simulate future technology while the technology is still under development and not ready for the consumer market.
- Participatory design with first responders with multiple iterations taking expert feedback into account.

Goal

To simulate a next-generation user interface that has the potential to increase safety and agility to police officers during traffic stops.

Contributions

- A user interface design informed by the needs and culture of law enforcement.
- A traffic stop VR scenario where common procedures are enhanced with simulated augmented reality.
- A virtual on-demand arm-mounted display that shows information fed by a simulated image recognition system.
- A situational awareness interface with levels of intensity based on the information gathered.

Discussion

The proposed interface is designed to supplement the existing in-car computer system. Quickly and easily accessible information with the arm-mounted display, along with situational awareness notifications, aim to increase safety to the responding officer. Low risk tasks remain in the traditional interface.

Next Steps

Assess, through user studies:

- Situational awareness performance of different alert modalities (visual, haptic, audible);
- Levels of interaction fidelity, from natural interaction to indirect metaphors;
- The situational awareness interface with levels of intensity based on the information gathered.

We intend to perform the evaluations with a group of law enforcement collaborators.

Acknowledgements

This work is being performed under award #60NANB18D151 from the U.S. Department of Commerce, National Institute of Standards and Technology, Public Safety Communications Research Division.

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