

HRI Reading Group

@ Instituto Superior Técnico

Meeting #8 (10 Dec 2018)

Paper

Rothenbücher, Dirk, Jamy Li, David Sirkin, Brian Mok, and Wendy Ju. "**Ghost driver: A field study investigating the interaction between pedestrians and driverless vehicles.**" In *Robot and Human Interactive Communication (RO-MAN)*, 25th IEEE International Symposium on, pp. 795-802. IEEE, 2016.

WoZ method for driverless car

- Faux (confederate) driver using a car seat costume
- 2 locations
- Driver training and considerations:
 - Habituation to the course
 - Modification of the behaviour
 - Communication with the driver
- Survey questions and video analysis

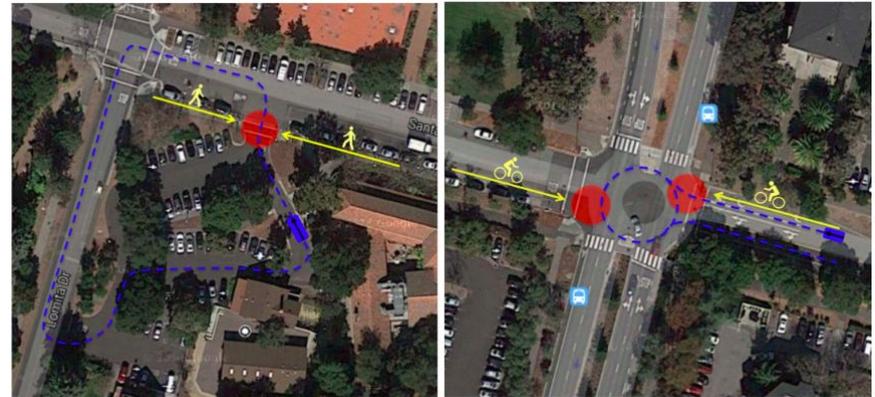


Fig. 3. Locations used in experiment. First location at a parking lot (left). Second location at a traffic circle (right).

WoZ method for driverless car

Pros

- Can test (emulated) future technology with people (perceptions and reactions)
- Cost-efficient
- Powerful tool to predict effectiveness of the interface and evaluate whether it is worth pursuing developing the technology
- Can be used outside of lab environments without worrying about safety issues

Cons

- Production and variation of desired behavior biased by previous wizard experience (enhanced by tasks safety concerns)
- Deception involved (may be ethically wrong)
- General comment: The concept of WoZ is not clear. There are many levels of control possible, and whether deception is involved or not, it may have a very different impact
- Novelty effect is amplified because usually new technologies are tested with this method

WoZ method for driverless car

Challenges

- How can deception be achieved?
- Safety design considerations
- Training the Wizard
- How to deal with the novelty effect

Possible solutions

- They provide a solution through the faux suit
- Important to select carefully which part to be wizarded
- Long-term studies

Exercise: Social driverless car

Design a social interface for an autonomous car to communicate with pedestrians / bicyclists at a pedestrian / bicycle crossing.

- Considerations:
 - Inclusive design (e.g., people with visual or auditory impairments, ...)
 - (Electric cars have lower sounds)
 - Mapping position, speed and acceleration
 - Eyes on the front of the car?
 - Express intent to stop, not just stopping state
 - Lights telling people “safe to pass” or “not safe to pass”
 - (In an infrastructure setting, car can communicate with the pedestrian lights → These may not exist)
 - Allow two-way communication car-pedestrian → e.g., classifier to detect people’s intentions (inclusive design for people with impairments, elderly, animals, children, etc.)

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Schedule for Spring TBD!