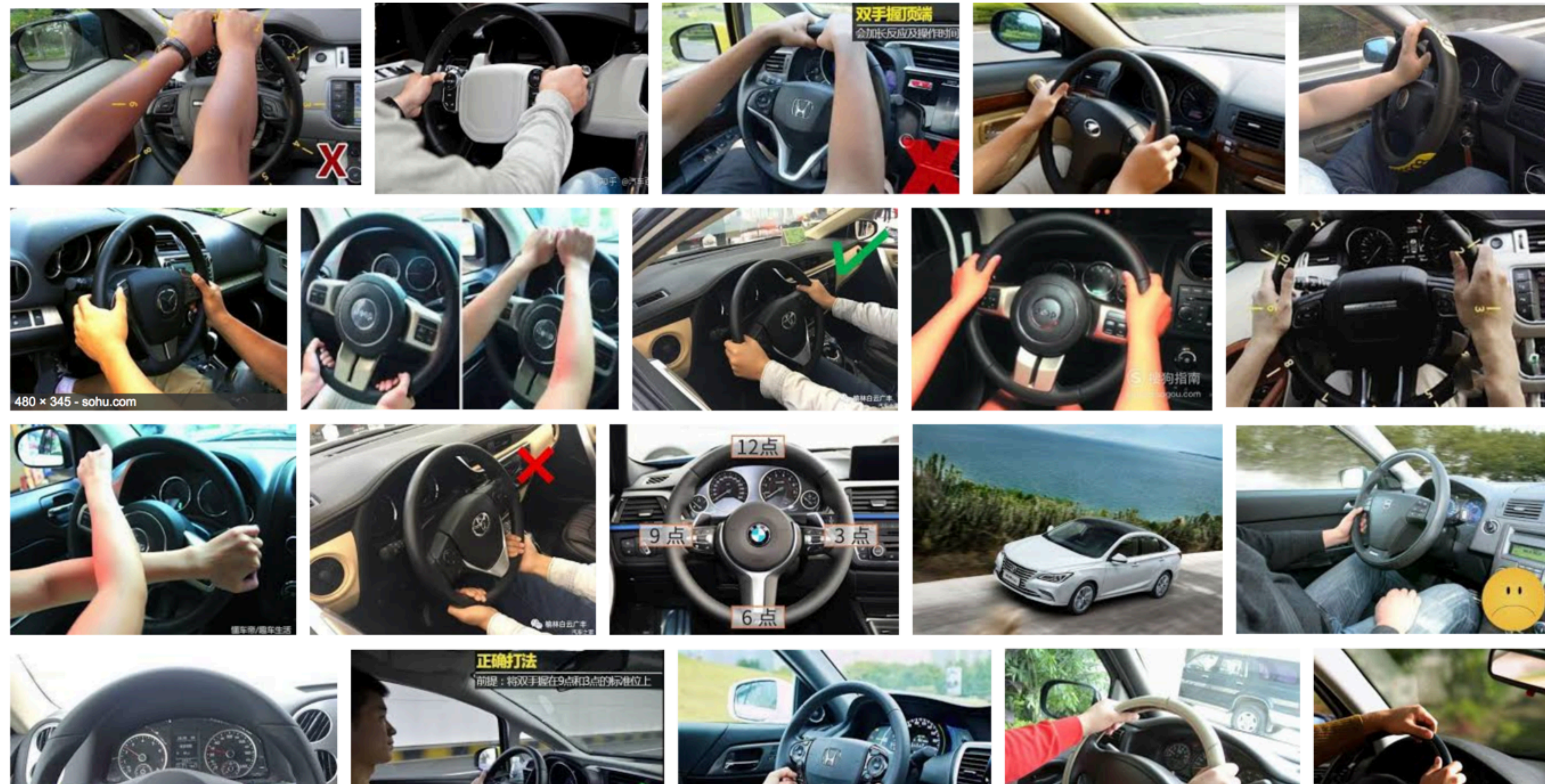


3D Pressure sensitivity controlled Steering Wheel

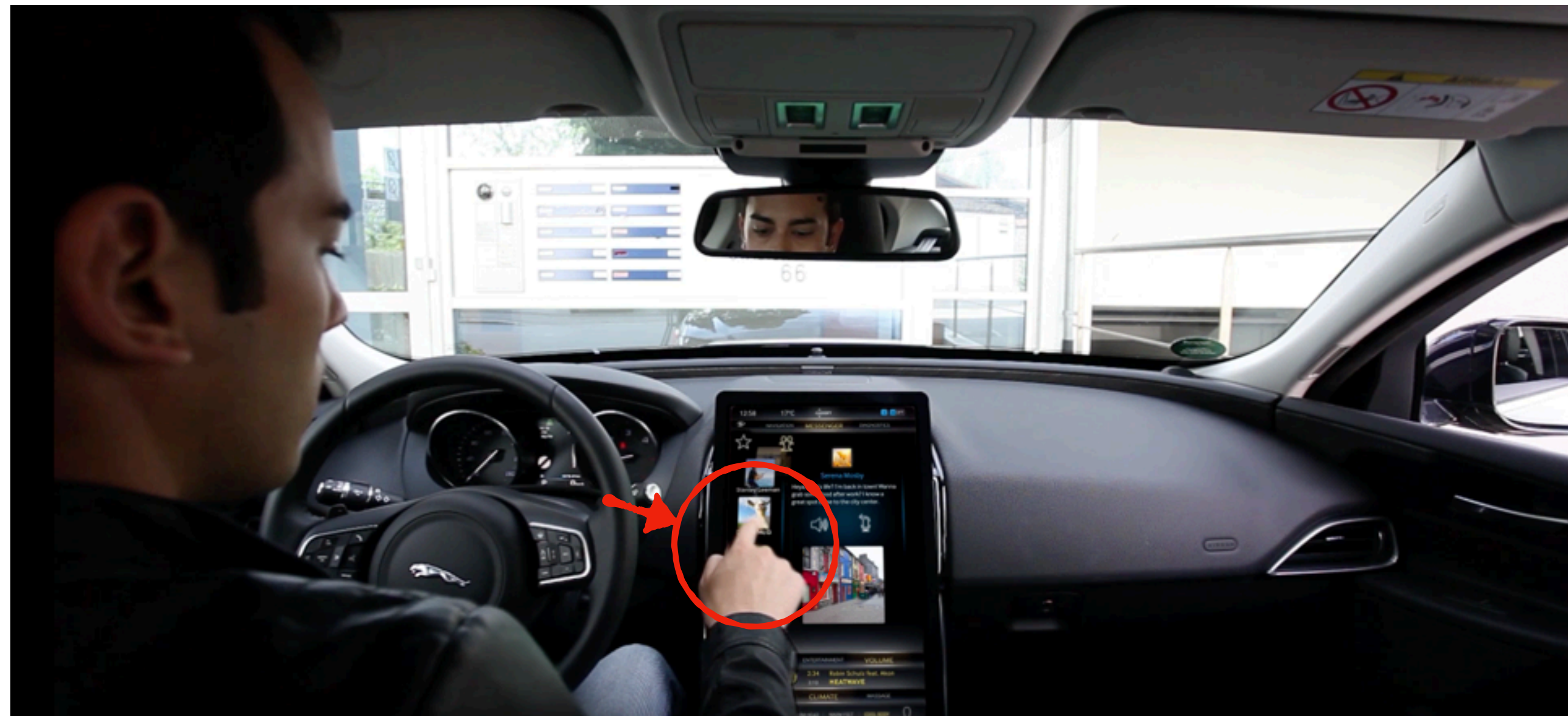
Yang Li
05/07/2018

Why



Bad hands behaviour on steering wheel

Why



Hand-off while driving

Hands operations in vehicle

- Switches
- Levers
- Buttons
- **Knobs (Greater need for driver resources.对驾驶员资源消耗最大)**
- **Touch screens (Greater need for visual resources.对视觉资源需求较大)**

Why

Keele University psychological scientist James Hartley found that out of 230 drivers observed, only around 25% were actually **using two hands to grasp the wheel at the recommended 9 and 3 o'clock positions.**

The survey which has done by shows that British drivers are taking a hands off approach to making sure they're fully in control of a vehicle and multi-tasking seems to be a major culprit. Driving one-handed for whatever reason can be dangerous and in some cases can lead to criminal charges, so we'd **advise driver to keep their hands on the wheel and their eyes on the road.**"

What

“pressure sensitive sensor”

to do

- **Directly and safe inputs**
- **Hand-off detection & Driving behaviour correction**

Help

decrease distraction
safer & easier

What Prototype

Using
scenarios

Left turn
signal

Right turn
signal

Emergency
flasher

1

2

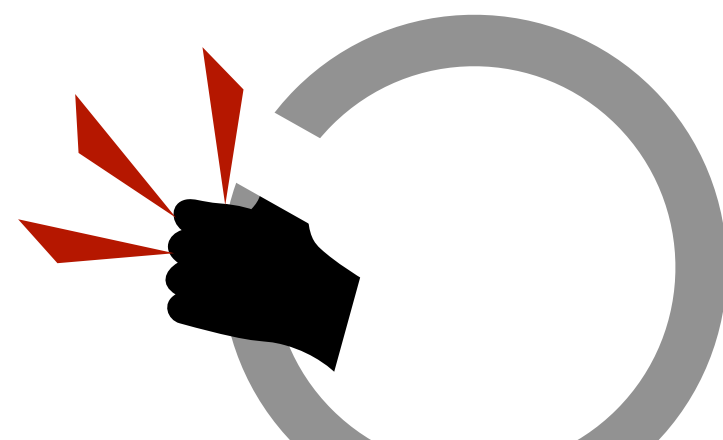
3

Display

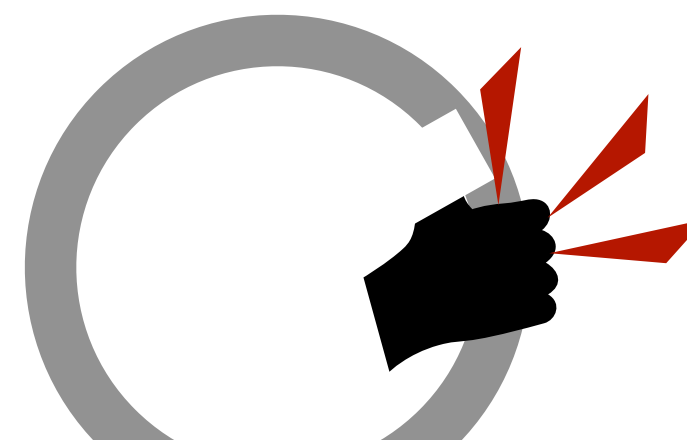


Gesture

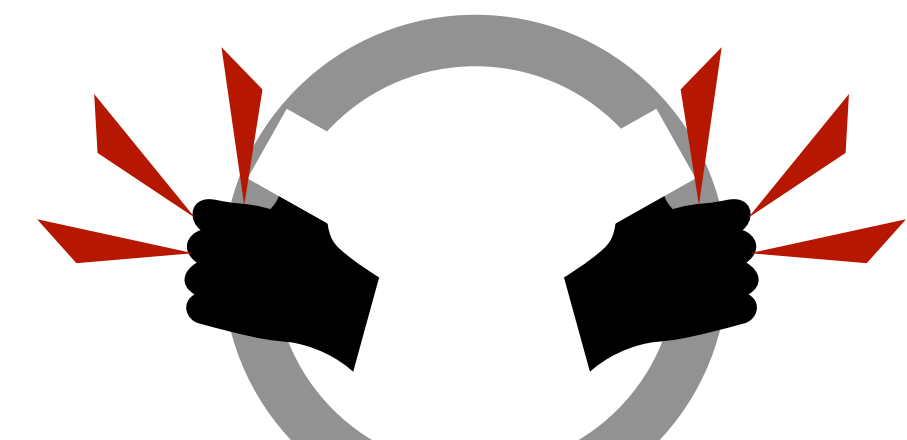
hard grip(L1) with
left hand



hard grip(L1) with
right hand



hard grip(L1) with
both hands



What Prototype

Using
scenarios

Horn

Wiper

.....

4

5

6

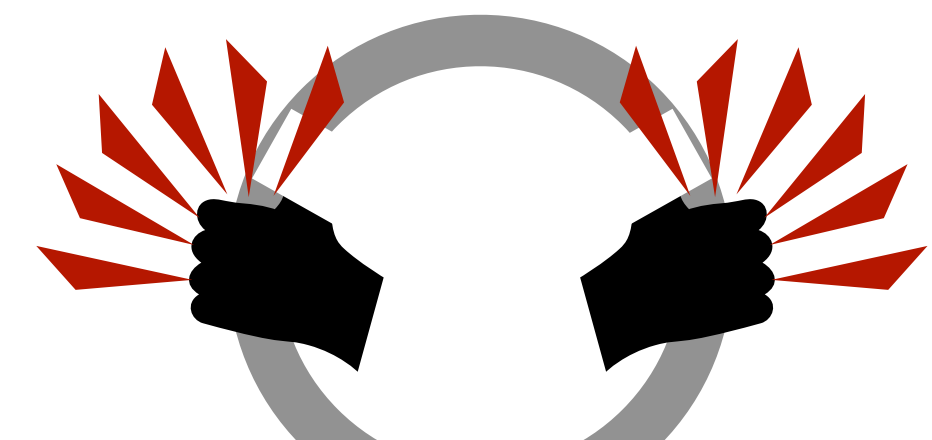
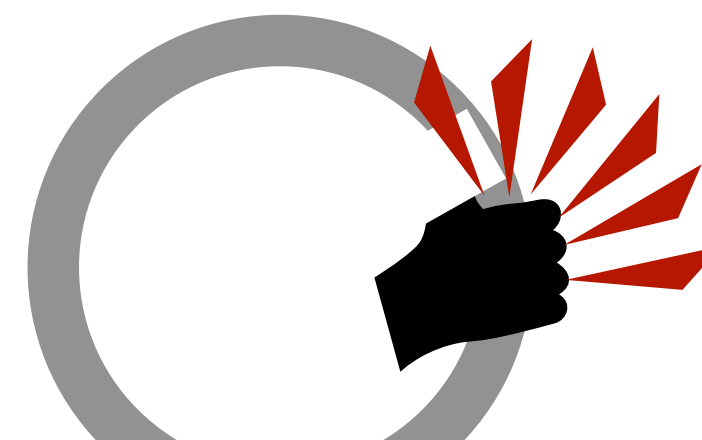
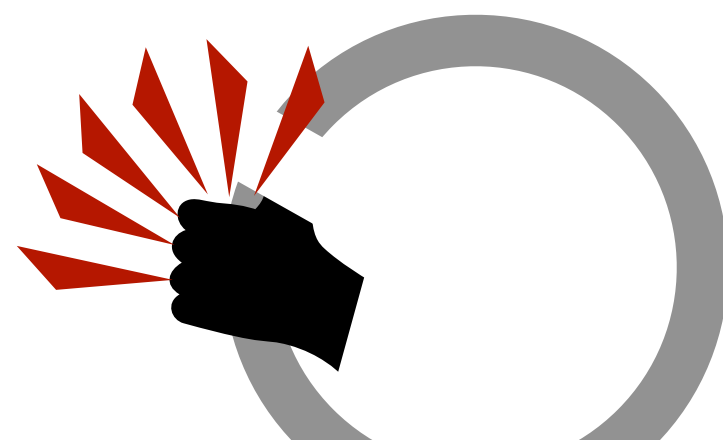
Display

Gesture

hard grip(L2) with
left hand

hard grip(L2) with
right hand

hard grip(L2) with
both hands



What

Driver also can define gestures based on their behaviour and custom.

How

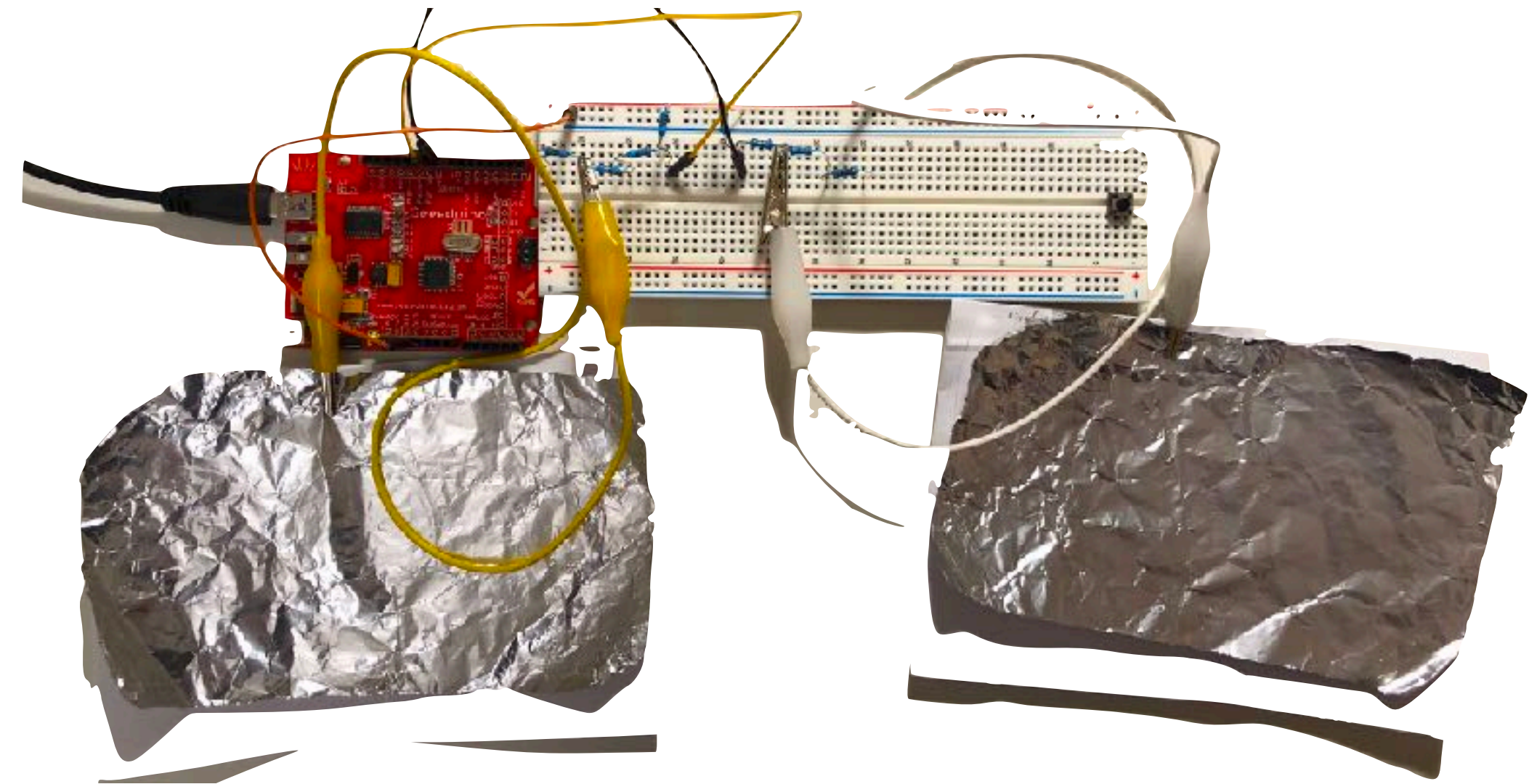
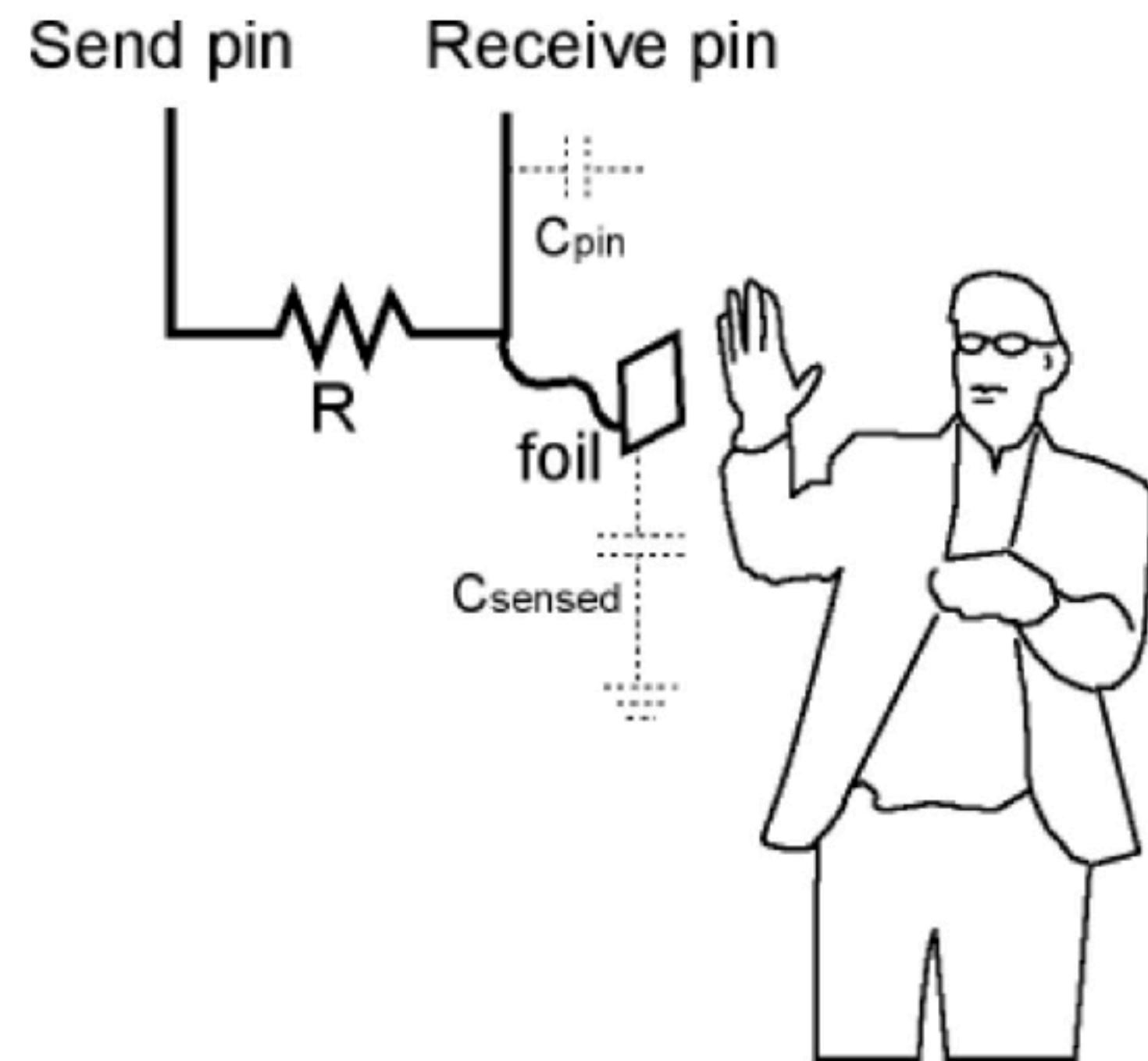
capacitive sensor

to detect

- **If the driver grasp the wheel at 9 and 3 o'clock positions**
- **The strength and position of gripping**

How

How it works



How

hard grip with left hand



Design — — Prototype

How

hard grip with right hand



Design — — Prototype

How

hard grip with both hands



Future Work

- **Test participants to invent intuitive gestures**
- **Test on driving scenario to know the help of this multi-touch screen**
- **Do multi-touch on steering wheel**

Thanks