

WatchOut:

Facilitating Safe
Driving Behaviors with Social Support

Hyojin Chin, Hengameh Zabihi,
Sangkeun Park, Mun Yong Yi, Uichin Lee
@ Knowledge Service Engineering, KAIST

Background

- Bad driving behaviors are a major cause of traffic accidents, many of which result in fatalities.
- Drivers behave relatively safely when they are being monitored or feedback of their behavior is provided.

Research Objectives

- Intends to encourage safe driving habits by
 - Increasing drivers' self-awareness about their own driving habits
 - Receiving supportive feedback on their driving behaviors from a loved one as an intervention method.

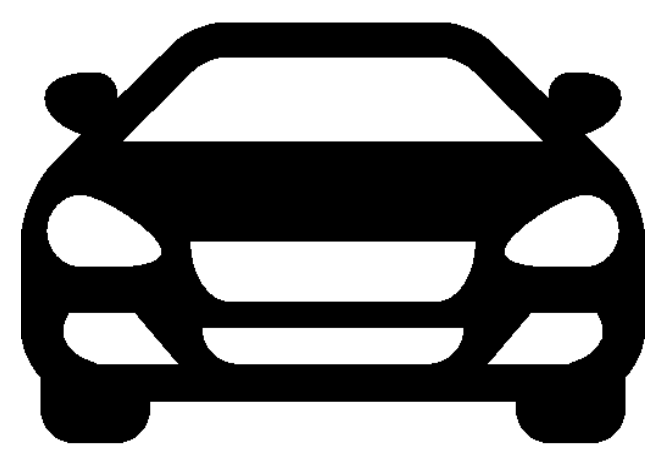
System Design

Developed a novel Android prototype mobile application called WatchOut to assess bad driving behaviors, increase the awareness of a driver's own driving behaviors, and identify the influence of intimate' social reinforcement.

Assess 5 bad driving behaviors

Use a threshold-based method using sensor data from smartphone embedded sensors.

- Rapid acceleration
- Slamming on the brakes
- Hard left cornering
- Hard right cornering
- High speed



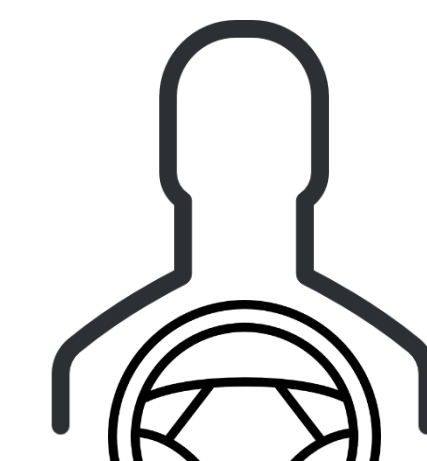
2017/01/09 00:16:27	
Distance: 0.0	Acceleration: 0
	Braking: 0
	Right turn: 5
Score: 85	Left turn: 0
	Speeding: 0

Every driver received a score on a scale from 0 to 100

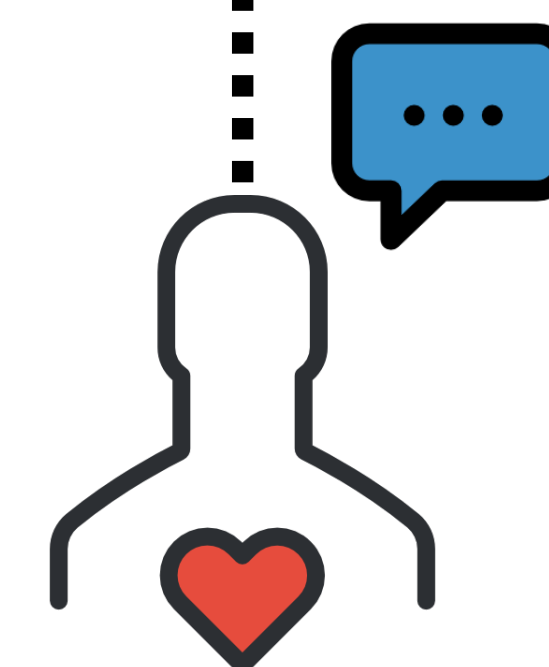
(1) Monitoring trip record

(2) Sharing trip record

Driver



(3) Feedback



Supporter

Shared their feelings and concerns to the drivers

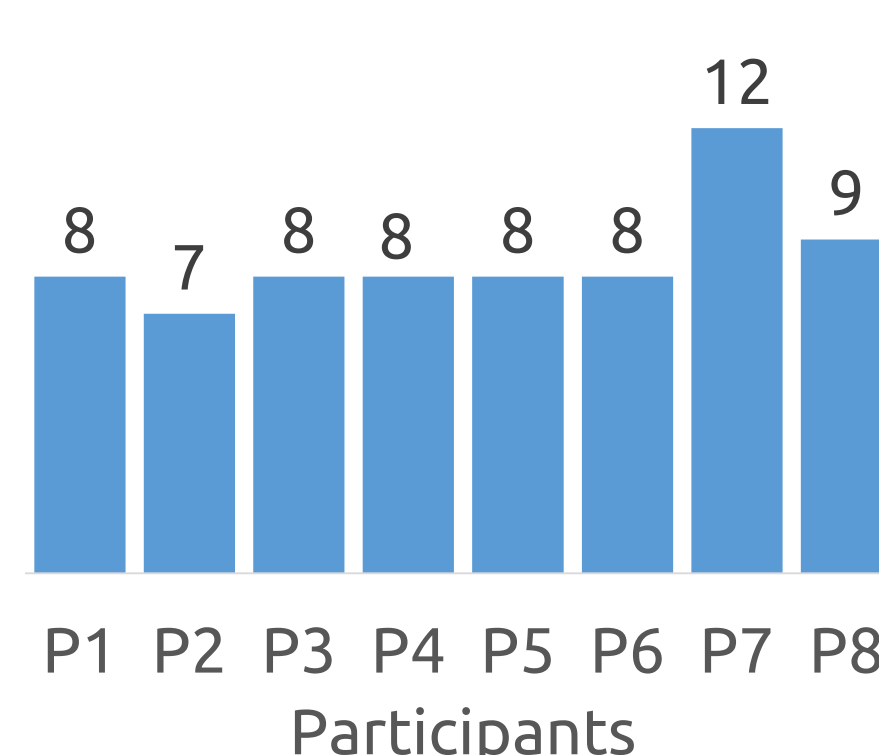
Examine the effectiveness of the following in driving behavior changes:

- The self-awareness of a driver's own driving habits with a smartphone sensor-based driving assessment
- How a person's intimate social reinforcement (e.g social attention and affection) can influence driving behaviors

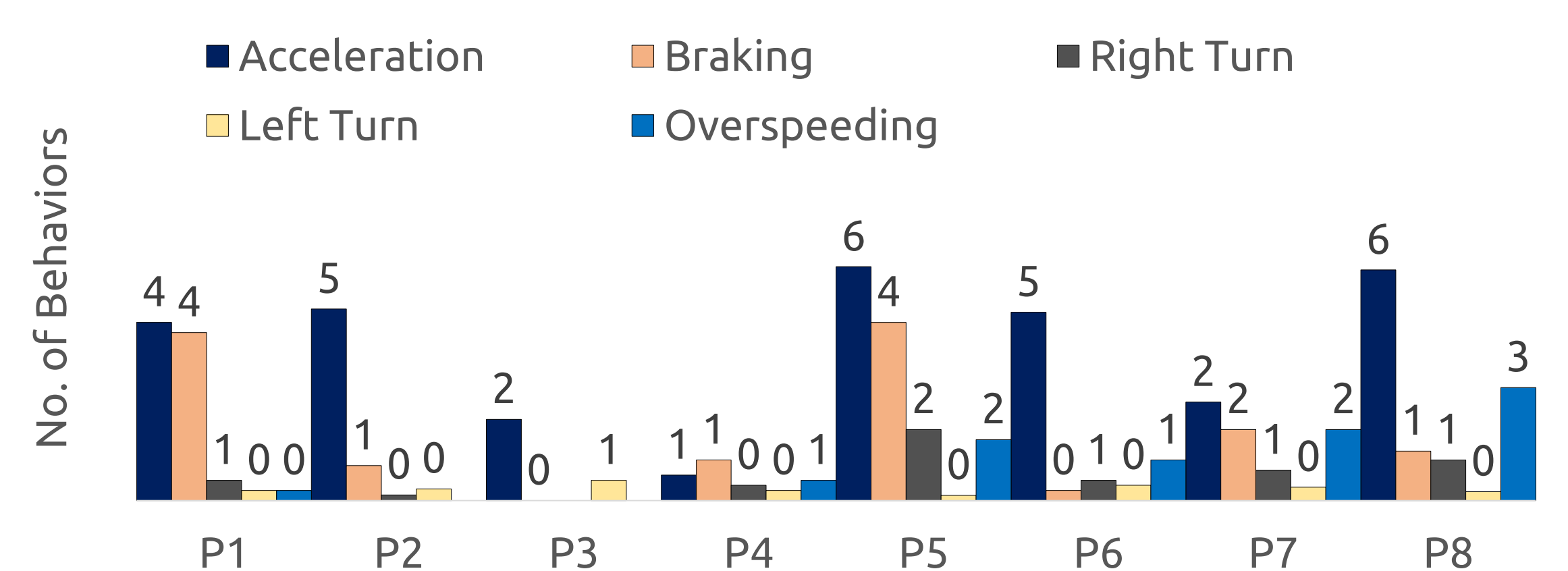
Field Experiment

- Recruited drivers & driver's intimate person to support the interventions
- 3 married couples, 2 parent-child couples, 1 unmarried couple, 1 sibling couple, and 1 pair of friends
- Conducted field experiment 5 days

Participation (Number of Trips)



Dangerous behavior per trip



Results

Survey results on filed experiment (N=16)

I. Social Reinforcement in Driving Behavior

- The scored objective feedback provided by WatchOut helped to positively change driving behaviors
- Drivers agreed that the supporters became aware of the driver's behaviors and that in turn positively influenced their driving
- The objective feedback from supporters helped driver drive more safely
- Supporter agreed that they could provide the driver with more objective and effective feedback than before

II. Social Face in Driving Behavior

- A driver's social face is important in keeping good driving behaviors: Drivers hope to look good to their closest person and to be regarded as a responsible person

* *Social Face: the face is a mask that changes depending on the audience and the variety of social interactions*

Future work

- New features can enhance the effectiveness of driving behavioral change
- May compare the pair group with the driver group without social reinforcement
- May investigate the outcome's dependence on the relationship between driver-supporter including the power-relationship between the two partners
- Need to cover a longer period to examine lasting behavioral changes
- Improve privacy protection