DECO1013: Sound Design & Sonification

Assignment 1: Functional Sound Design

Safety Driving Alert

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Research's background

Inspired by the "Concept car to showcase anti-driving technology", (2007) introduced by Nissan Motor Co.,ltd. The sound design idea here is to provide the set of in car alarms that notice drivers before or during a trip to prevent faulty and absent-minded driving problems such as drink driving, micro-sleep and negligence. The critical level of each situation is diverse so does too the alert type.

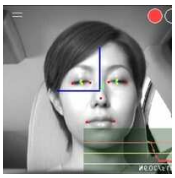
Context

Alcohol – detected

This alarm will be activated when the alcohol-detect sensor which is located on the gear knob of the car identified the positive alcohol level on driver's palm. Consequently, the driver will not be able to change the shift and drive. The alarm produces two similar tones once whenever the driver attempt to use the gear knob whilst high-level of alcohol detected until his/her alcohol level is not critical then the system would allow driver to start the engine. The design for this alarm was generated by vacuum (Pro-tool) with the Bass preset. As a notice to the driver that the system denied to start due to the condition so it is not as urgent as the other alarms where the car is in motion.

Alcohol-detect sensor.

Micro sleep preventer (less attentive)



Through the facial recognition system which is mounted on the instrument cluster facing the driver's face. The system is calibrated to monitor the driver's state of consciousness through the blinking of the eyes (Nissan, 2007). When the system detects signs of drowsiness, the alarm will be activated. There are two stages in which this alarm will work differently. The first stage is when the driver starts to blink eyes slowly and gradually, the alarm will alerts

leisurely with two tones each time and followed by the same alert after one second. However, the frequency as well as the volume (Voltage-Control Amplifier in Vacuum) of the alarm will be faster and louder when the situation becomes more urgent as driver eyes' have been closing for a period. At this stage, the function of the alarm is to wake the drive up immediately.

Driving behavior (negligence)

The system identify signs of inattentive or distraction in the driver by constantly monitoring the operational behaviour of the vihicle (e.g. sesing if the vehicle is veering out of its driving lane). When the system detects such behaviour, the negligance-alarm is issued in the form of gradually 'beep' tone (with ARP enabled at the rate at 1/8). It should gives driver the immediate attention in order for him/her to handle the car properly. Then the alarm will be deactivated.

Low fuel level

This alarm is generated with AMP volume was reduced by 1.5 dB of the normal 'Walking Seq Bass' preset, ARP is used at the rate ¼. Noticing the driver of the critical level of fuel, this soft slowly beep alarm provides driver the situation without distracting from driving much. Therefore, he/she can pull into the roadside safely for checking the problem.

Overloaded engine

This is a most urgent situation when the car could no longer control the heat of the engine, the situation requires the driver to stop the car as soon as possible, therefore, the alarm should hit into driver's attention right away. Generated through vacuum, the beep tone was put at high pitch that would give extra echo, AMP vol is also increased and AMP on with the rate of 1/8.

References:

Concept car to showcase anti-driving technology, (2007), Nissan Motor, available at:

http://youtube.com/watch?v=h-Mw12HIBLg.