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Vehicular Daylight-Saving Time Changes Watch Dog

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Background:

Daylight-saving time changes can adversely affect drivers and riders of vehicles during the "spring forward" event when clocks advance causing a loss of one hour of precious sleep.

Countermeasures for this phenomenon can be taken in two different classes, pre-emptive and post-detection. Traditional Driver State Monitoring (DSM) assesses the physiological state of the driver in-situ enabling post-detection countermeasures. While most vehicle technology is designed to detect a scenario and provide an appropriate countermeasure, the concept described in this document proposes to pre-empt the occurrence of driving challenges by providing incentives to improve driving conditions based on an anticipated challenge. Given that vehicle systems are less sensitive to time change, the question is, "why not utilize them to enable safer and more consistent driving?"

Method:

Once the local daylight-saving date is defined, one of the vehicle control modules will start looking for an engine starting messages the day before the time switch. A message will be displayed to the driver on any available system indicating the time change and suggesting to the driver, for example, *'Take some extra time tomorrow and have a coffee on us'*.

If the first engine starting time is early (for example before 8:00AM), then the vehicle clock display will be adjusted to inform the driver either on vehicle display or user's smart device. When the speed is greater than 5mph, audible and text alerts will be announced, warning the driver with the risks of driving this morning and recommending risk avoidance for example…

> "Pay attention and eliminate all distractions including cell phones and vehicle clocks that are off an hour (if not adjusted yet)."
>
> "Watch and exercise extra caution when backing out of driveway, turn on your headlights and don't use high beams when other vehicles or pedestrians are present,"
>
> "Make sure all lights, cameras, mirrors, windows, and windshields are clean."
>
> "Slow down during rain, fog, and Sun glare, and be sure to use your respective App for *coupon for a coffee on us*."

After the mentioned risk avoidance announcements are made to the driver, the vehicle sensing system will start monitoring driver's behavior (eye closure metrics to detect drowsiness, mouth movement indicative of a yawn, hand grip for steering wheel, head motion) and any other existing sensors for DSM (driver state monitoring).

The system will also watch for the threshold of relative gap between surrounding vehicles by watching vehicles that are forward, behind, or in adjacent lanes. Other drivers might be tired and have a higher likelihood of delayed reaction. To avoid this scenario, braking will be activated to maintain extra

distance away from vehicles determined to be higher risk, pass with extra caution, or via V2V send message to the vehicle engaging in risky behavior and to other vehicles present. This extra monitoring of adjacent vehicles and communications to determine risk behavior can trigger additional controller thresholds (for example, backup camera zones (Green, Yellow, Red), different ultrasonic sensor chiming once some thresholds are exceeded, relative gap and speed to other surrounding vehicles).

Also, when the vehicle recognizes it has arrived at its final destination and opens the doors, it announces time-shift safety tips for pedestrians, and a reminder is sent not to forget belongings or a child in the vehicle because the driver and occupant will start walking away.

Example of the safety tips are:

Avoid using phone or music while walking.

Don't cover your view with umbrella, hood, or hat.

Be visible to other drivers and make eye contact with them.

Be careful when passing by parked vehicles, walk facing traffic, etc.

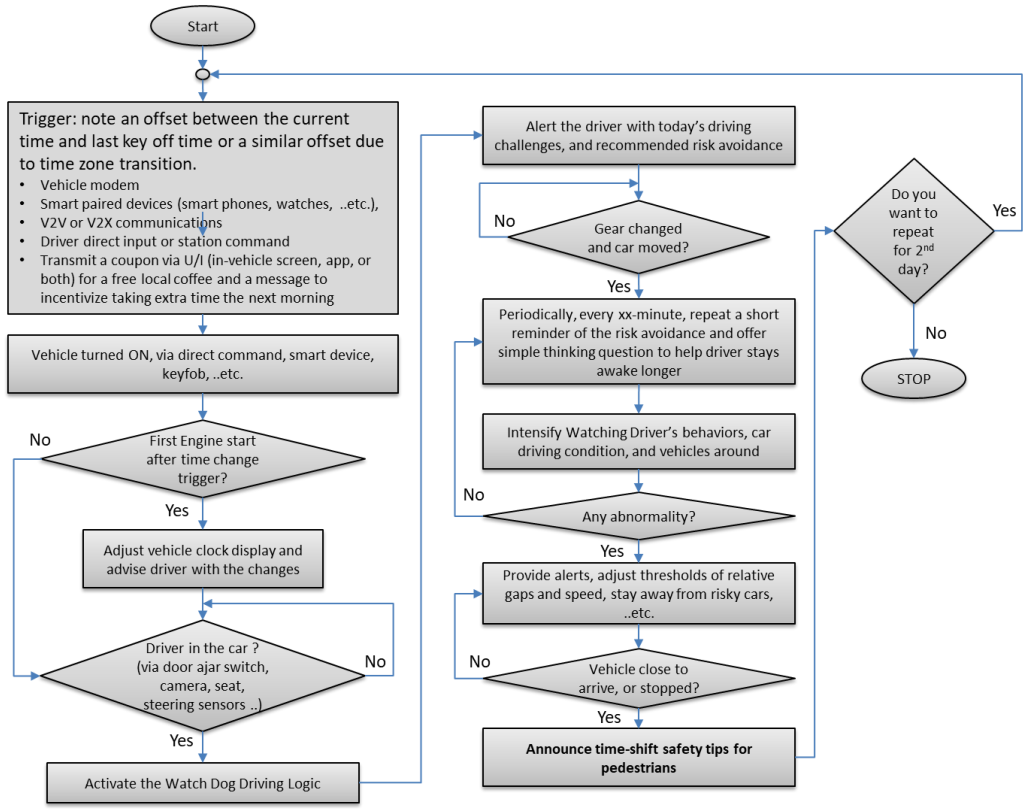

Figure 1: Illustration of the methodology

Advantages:

This invention introduces a new “Vehicular Daylight-Saving Time Change Watch Dog Methodology” to alert driver (and rideshare occupants) with the daylight-saving time changes and remind them to take extra caution and watch surrounding vehicles and pedestrians.

It intensifies its monitoring of the driver, riders, and vehicle actions (image, voice, physical behavior, and vehicle driving conditions) to recompense the drivers sleepiness influence on vehicle control and safety.

It develops a semi-active interaction that advances vehicle clock adjustment following the daylight-saving time changes to prevent driver’s distraction trying to change the clock, and/or minimize confusions of rideshare passengers when the vehicle’s clock display doesn’t match the time changes.

In summary, the method includes the steps of: (a) receiving information relating to daylight-saving time change; (b) sensing the driver behavior, vehicle driving, and the surrounding vehicles; (c) analyzing and defining driver and vehicle behavior; (d) activating the functionality of the warning elements; (e) enhancing some controllers; (f) periodically checking the driving and environmental conditions.

Disclosed anonymously