Survey on Rash Driving Detection Using Acceleration And Orientation Sensors

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Abstract—Rash driving is most dangerous for people. Risky driving primarily includes heavy either rudely or driving under the power of alcohol, is a major grounds of traffic accidents throughout the world. They provide an early detection to alert the dangerous vehicle maneuvers related to rash driving. There are lots of sensors used in various techniques to detect the rash driving. Such techniques and sensors are being discussed in this survey.

Keywords — Acceleration, Detection, Embedded device, Orientation sensors, Rash driving.

1. INTRODUCTION
Today’s life many people are intentionally or unintentionally driving rashly so many accidents are occurring driving. In order to monitor the driver behavior smart phone sensors are used [1]. This paper provide the survey on determine the rash driving detection using acceleration and orientation sensors. Number of accidents caused by impairment of alertness in vehicle drivers pose a serious danger to people, not only the drivers who are driving their vehicle but also to the general public pose a serious threat due to insecure driving[2]. More than a million people have died in traffic crashes in the United States drunk driving is one of the main causes. Camera performance and position is determining the proper work of creature or system [1]. Vehicle infrastructure includes the communication between vehicles, vehicles and the transportation and ensures highway safety [4]. Focus on the cues of problems of lane location continuation and pace power. We map these cues into lateral acceleration and longitudinal acceleration of Vehicles [1]. Real – time on board accident prevention system with major on public transport vehicles. The context-awareness based approach is used to detecting the behavior of driver. Driver's behavior is a combination of different factors such as the driver, the vehicle and the environment [4]. If motivating pattern spray predefined rash driving criteria, system indicate driver a propos it and if circumstances continues, speed limiting is applied to vehicle at the same time text message is send to nearest police station [5]. Driving technique can naturally be divided into two category: “typical” (non-aggressive) and aggressive. Understanding and recognizing driving events that fall into these categories can aid in vehicle safety systems [3].Camera (often multiple), Microphone (often multiple), 3-axis Accelerometer, 3-axis Gyroscope, Proximity, Ambient Light, PWM, Magnetometer, GPS, These devices are powerful, inexpensive and versatile research platforms that make instrumenting a vehicle for data collection accessible to the general public as well as academia. For the system, focus will be with the rear-facing camera, accelerometer, gyroscope and GPS [3]. Dedicated short range Communication is used to allow vehicles in close nearness to converse with each other, or to communicate with pavement apparatus [6].

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New way of monitoring driver performance using an electronic unit with two sensors, namely a GPS and accelerometer, and theoretical models, which include both acceleration and speed data, to detect and report erratic driving of a minibus taxis [7].

2.1) Global Positioning System:
The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil, and commercial users around the world. The United States government created the system, maintains it, and makes it freely accessible to anyone with a GPS receiver.

2.2) PWM:
Pulse-width modulation (PWM) or pulse-duration modulation (PDM), a technique used to encode a message into a pulsing signal. It is a type of modulation. Although this modulation technique can be used to encode information for transmission, its main use is to allow the control of the power supplied to electrical devices, especially to inertial loads such as motors. In addition, PWM is one of the two principal algorithms used in photovoltaic solar battery chargers, the other being MPPT. Maximum power point tracking (MPPT) is a technique that grid connected inverters, solar battery chargers and similar devices use to get the maximum possible power from one or more photovoltaic modules.

2.3) Context Aware Computing:
Context-aware computing refers to a general class of mobile systems that can sense their physical environment, and adapt their behavior accordingly. Context-aware systems are a component of a ubiquitous computing or pervasive computing environment. Three important aspects of context are: where you are; who you are with; and what resources are nearby. Although location is a primary capability, location

2.4) Zigbee:
ZigBee is a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios. ZigBee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones.

2.5) Driver behavior:
Behavior is frequently studied in conjunction with accident research in order to assess causes and differences in accident involvement. Traffic psychologists distinguish three motivations of driver behavior: reasoned or planned behavior, impulsive or emotional behavior, and habitual behavior. Additionally, social and cognitive applications of psychology are used, such as enforcement, road safety education campaigns, and also therapeutic and rehabilitation programs.

2.6) Acceleration:
Acceleration is the rate of change of velocity with time. In everyday English, the word acceleration is often used to describe a state of increasing speed. Acceleration, in physics is the rate of change of velocity of an object. An object’s acceleration is the net result of any and all forces acting on the object.

2.7) Magnetometers
Magnetometers are measurement instruments used for two general purposes: to measure the magnetization of a magnetic material like a ferromagnetic, or to measure the strength and, in some cases, the direction of the magnetic field at a point in space.

2.8) Ambient light:
Ambient light refers to any source of light that is not explicitly supplied by the photographer for the purpose of taking photos. The term usually refers to sources of light that are already available naturally (e.g. the sun, moon, lightning) or artificial light already being used (e.g. to light a room).

3. CONCLUSION:
The rash driving detection techniques can be provided along with the sensors and the techniques can be useful along in the road side units. They can even be detecting along the...
minimum coverage area of over one kilometer up to three kilometer. These techniques can even be extended along to even further more coverage area and enhance the security features to the common people.

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