PATENT ATTORNEY CERTIFICATION EXAM

COMPUTER SYSTEMS CATEGORY (JUNE 2019)

Instructions:

Refer to enclosed disclosure which includes a background of a patent application along with a brief overview of the invention accompanied by a flow chart.

Please draft a complete patent application based on this disclosure.

Include at least the following sections: Title, Summary of the Invention, Detailed Description, Claims, and any additional Figures deemed necessary (the flow chart may be used as one of the Figures with reference numbers added).

Claims should include at least one independent system claim and at least one independent method claim, along with at least two dependent claims in each category.

The application should be formulated in order to meet the requirements of Sections 3, 4, 5, 12 and 13 of The Israel Patent Law (חוק הפטנטים).

Grading criteria:

- specification – relevant content, inclusion of important features and embodiments, suitable figures, ample support for claimed features, clarity of text, proper structure and format [50%]
- claims – identifying and defining essence of invention, proper formatting, consideration of prior art/background, relevant dependent claims [50%]

PASSING GRADE = 65%

בהצלחה!

TECHNICAL FIELD OF THE INVENTION

This disclosure relates generally to the field of mobile device identification, and, in particular, to computer-implemented systems and methods for determining roles and usages of a mobile device within a vehicle.

BACKGROUND OF THE INVENTION

There are approximately 4.6 billion cellular phone subscriptions in the world over which it is estimated that more than 2 trillion text (SMS) messages are sent annually. There are also over 800 million transportation vehicles in the world. The magnitude of these statistics indicates that cellular phone use in vehicles is inevitable and is likely to remain quite common, unless preventative measures are taken.

Drivers using a hand-held cellular phone or smartphone for talking, text messaging, and/or for executing other applications or 'apps' while driving has become a problem of near-epidemic proportions. Studies on distracted driving have shown that by talking on a cell phone, a driver increases his/her risk of an accident by a factor of four. Even worse, sending text messages increases a driver's accident risk 23-fold. Additionally, studies have shown that the temptation to use a cellular phone for texting, talking, and other activities while operating a vehicle is not limited to younger drivers—adult drivers have been shown to text more often than younger ones.

In response to this growing concern and danger, numerous regulatory actions have been put in place to attempt to mitigate such phone-based distractions to drivers. For example, in the United States, thirty states have banned drivers of vehicles from texting, and many have subsequently increased the penalties for such violations. Driving-while-texting has also been banned throughout Europe and many other countries around the world. Additionally, talking on a hand-held cellular phone while driving a vehicle has been banned in eight US states, and such cell phone use has been banned in all of Europe and in many other countries.

The effectiveness of these laws alone, without an effective means of enforcement, is questionable. Being that cellular phones are generally small and discreet and drivers are frequently in motion, it is often difficult for law enforcement personnel to effectively police for such violations. Indeed, statistics show that accidents arising from cellular phone-based distractions are increasing as the popularity of such devices increases.

Given the easy accessibility of cell phones to drivers, many drivers' apparent desire to operate their cellular phones while driving, and the difficulties attendant with enforcing laws prohibiting cellular phone use, it is likely that drivers will continue to use cellular phones for texting, talking, and/or other activities (e.g., playing games or running applications), for the foreseeable future.

Several solutions have been proposed to address illegal/unsafe cell phone usage by drivers of vehicles. Certain of these approaches seek to utilize a phone's on-board GPS and/or accelerometers to establish the likelihood that the phone is being used within a moving vehicle. If the data extracted from the GPS and/or the accelerometers

indicates that the vehicle is moving, then the software in the cell phone deactivates "risky" cell phone functions or otherwise thwarts cell phone-based distractions (such solutions are commonly known as "blocking" solutions).

However, such solutions are incapable of distinguishing between the driver of a vehicle and a passenger in the same vehicle who should retain the right to use his/her cellular phone. There are various common driving scenarios where it would be advantageous for a passenger to use his/her cellular phone (such as to obtain driving directions). As such, the proposed "blocking" solutions entail substantial and critical shortcomings, as they often unnecessarily block a passenger's ability to use their cellular phone within a moving vehicle. This challenge of distinguishing between a passenger and a driver in a moving vehicle is commonly referred to as the "Passenger Problem".

Other solutions addressing this problem of cellular phone use while driving require the pre-installation of a hardware device in the vehicle. Such devices are typically installed next to the driver and are used to transmit a short distance blocking signal, effectively creating a no-use zone around the driver's location within the car. Such devices prevent the driver (or anyone located within the no-use zone) from using a cellular phone by effectively deactivating the phone. However, such approaches are onerous in that they require that car-owners purchase and install the requisite additional hardware, creating significant impediments for widespread adoption. In addition, the costs of manufacturing and installing such hardware are rather high—approximately $100-$200 per cellular phone.

Yet other proposed solutions attempt to address the problem of cellular phone use while driving by utilizing text-to-voice technology, whereby email and text messages are spoken for the user (presumably the driver) while in a moving vehicle. However, such solutions also suffer from the Passenger Problem, i.e., the text-to-voice application does not know how to distinguish drivers (for whom the messages should be spoken) from passengers (for whom they should not be spoken). As such, substantial confusion can arise in a moving car with several passengers carrying cellular phones. In such a scenario, each of the cellular phones of the various passengers will recite the messages received by the respective phone, since such solutions also cannot distinguish between the cellular phone of the driver and the phones of the passengers.

In addition, other proposed solutions seek to block all texting and/or other applications by administering a small test or puzzle to the user. The time that it takes the user to solve to the test/puzzle can dictate whether the user is a driver or a passenger. However, it can be readily appreciated that such an approach, paradoxically, further distracts a driver who attempts to use his/her cellular phone while driving, rather than actually increasing the driver's safety.

OVERVIEW OF THE INVENTION

A computer-implemented system and method for restricting improper usage of a cellphone by a driver of a vehicle while allowing usage by passengers of the vehicle. The system is configured to control usage of a cell phone that includes an onboard GPS that generates location signals, accelerometer components that generate movement signals, and an input interface that accepts key-strokes by the user which generates key-stroke signals. The method includes the steps of first determining the geographic location of the cell phone using the location signals of the GPS components. Then, the location and movement signals are analyzed to determine if the cell phone is moving. If so, the movement is further analyzed to determine if the movement is indicative of the movement of a vehicle. This is done by comparing the movement signals with movement signals of known vehicles stored in memory. Next, a "user-signature" is calculated based on the movement signature, the type of vehicle and the key-stroke signals. This user-signature is then compared with known driver-signatures to determine if the cell phone user is a driver of a vehicle. If there is a match, the system will limit or block at least one operational function of the phone.

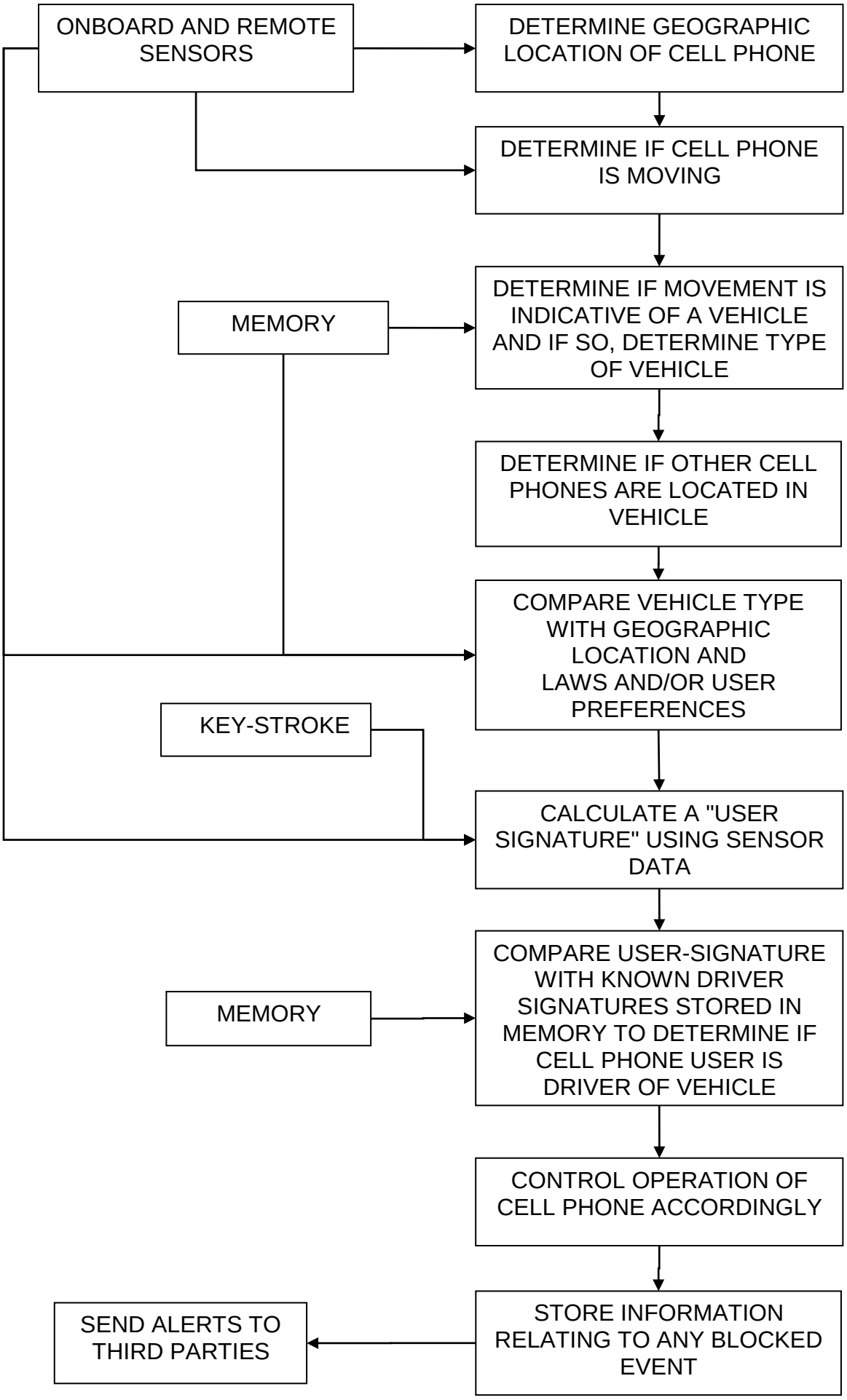
ONBOARD AND REMOTE SENSORS
DETERMINE GEOGRAPHIC LOCATION OF CELL PHONE
DETERMINE IF CELL PHONE IS MOVING
MEMORY
DETERMINE IF MOVEMENT IS INDICATIVE OF A VEHICLE AND IF SO, DETERMINE TYPE OF VEHICLE
DETERMINE IF OTHER CELL PHONES ARE LOCATED IN VEHICLE
COMPARE VEHICLE TYPE WITH GEOGRAPHIC LOCATION AND LAWS AND/OR USER PREFERENCES
KEY-STROKE
CALCULATE A "USER SIGNATURE" USING SENSOR DATA
MEMORY
COMPARE USER-SIGNATURE WITH KNOWN DRIVER SIGNATURES STORED IN MEMORY TO DETERMINE IF CELL PHONE USER IS DRIVER OF VEHICLE
CONTROL OPERATION OF CELL PHONE ACCORDINGLY
SEND ALERTS TO THIRD PARTIES
STORE INFORMATION RELATING TO ANY BLOCKED EVENT

FIGURE 1