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Title: METHOD AND SYSTEM FOR LOGGING VEHICLE BEHAV-
IOUR

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES
PATENT NO. 10,198,879 PURSUANT TO 35 U.S.C. §§ 311–319,
37 C.F.R. § 42

TABLE OF CONTENTS

I.	REQUIREMENTS FOR IPR	1
A.	Grounds for Standing.....	1
B.	Challenge and Relief Requested.....	1
C.	Claim Construction.....	2
II.	THE '879 PATENT	4
A.	Specification	4
B.	Prosecution History.....	5
C.	Priority Claim.....	5
1.	Peng is Prior Art.....	5
III.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	8
A.	[GROUND 1A] – Peng and Chatterjee render Claims 1-3, 5, 8, 16-23, 25, 28, 34, 37-54 Obvious.....	8
1.	Analysis	8
2.	Claim 1	25
3.	Claims 21, 46, 51, 54.....	41
4.	Claims 2, 3, 5, 8, 16-20, 41-43, 45.....	44
5.	Claims 22, 23, 25, 28, 34, 37-40, 44, 47-50, 52, 53.....	54
B.	[GROUND 1B] – Peng, Chatterjee, and Tamir Render Claims 4 and 24 Obvious	55
1.	Analysis	55
2.	Claims 4, 24.....	56
C.	[GROUND 1C] – Peng, Chatterjee, and Katayama Renders Claims 6, 9, 10, 14, 15, 26, 32, 33, 35, 36 Obvious.....	57
1.	Analysis	57
2.	Claims 6, 9, 10, 14, 15.....	65
3.	Claims 26, 32, 33, 35, 36.....	74
D.	[GROUND 1D] – Peng, Chatterjee, Katayama and Balachandran Render Claims 7 and 27 Obvious.....	75
1.	Analysis	75
2.	Claims 7, 27.....	77
E.	[GROUND 1E] – Peng, Chatterjee and Riemer Render Claims 11-13, 29-31 Obvious.....	78
1.	Analysis	78
2.	Claims 11-13, 29-31	79

F.	[GROUND 1F] – Peng, Chatterjee and Berkobin Render Claim 55	
	Obvious	83
	1. Analysis	83
	2. Claim 55	85
IV.	PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION.....	88
V.	CONCLUSION AND FEES	91
VI.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1).....	91
	A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1).....	91
	B. Related Matters Under 37 C.F.R. § 42.8(b)(2)	92
	C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3).....	92
	D. Service Information	93

EXHIBITS

USAA-1001	U.S. Patent No. 10,198,879 to Wright (“the ’879 Patent”)
USAA-1002	Excerpts from the Prosecution History of the ’879 Patent (“the Prosecution History”)
USAA-1003	Declaration and Curriculum Vitae of Dr. William Michalson
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- USAA-1075 Plaintiff Auto Telematics Ltd.'s Preliminary Infringement Contentions and Identification of Document Production Accompanying Disclosure in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. August 26, 2022)
- USAA-1076 United Services Automobile Association's Preliminary Invalidity Contentions in *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474 (W.D. Tex. October 21, 2022)
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- USAA-1078 Internet Archive of iPhone User Guide

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LISTING OF CHALLENGED CLAIMS

Claim	Identifier	Claim Language
1	[1.1]	A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device comprising:
	[1.2]	a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;
	[1.3]	a user interface;
	[1.4]	a processor; and
	[1.5]	a memory;
	[1.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use;
	[1.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and
	[1.8]	store a selection of the driving information to the memory;
	[1.9]	wherein the driving information is derived without data from the vehicle sensors, and
	[1.10]	the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.
2	[2]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device is controlled by the downloaded application to control the mobile device to detect occurrence of a predetermined event and in response take at least one predetermined action.

Claim	Identifier	Claim Language
3	[3]	A mobile telecommunication device according to claim 2, wherein predetermined action is storing driving information associated with that event to the memory.
4	[4]	A mobile telecommunication device according to claim 2, wherein predetermined action is storing driving information captured at a higher sampling rate than when an event is not detected.
5	[5]	A mobile telecommunication device according to claim 2, wherein predetermined action is transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system.
6	[6.1]	A mobile telecommunications device according to claim 2, wherein the predetermined action comprises providing feedback to a user to indicate that an event has been detected,
	[6.2]	the mobile telecommunications device being configured to receive a user interaction to confirm or deny whether the detected event has actually occurred following said feedback.
7	[7.1]	A mobile telecommunications device according to claim 6, wherein the feedback comprises notifying a user that a further action has been scheduled, and will be taken within a predetermined period,
	[7.2]	the mobile telecommunications device being further configured to receive a user interaction to confirm or deny whether the further scheduled action should be taken within a predetermined period.
8	[8.1]	A mobile telecommunications device according to claim 2, wherein the predetermined action comprises communicating to a remote system that an event has been detected,
	[8.2]	the mobile telecommunications device being further configured to receive from the remote system a

Claim	Identifier	Claim Language
		request to transmit to the remote system selected portions of the driving information associated with the detected event.
9	[9.1]	A mobile telecommunications device according to claim 2, wherein the memory comprises: a long term memory for persistently storing driving information and a short term memory for transiently storing driving information,
	[9.2]	wherein the short term memory receives driving information at a higher update rate than the long term memory,
	[9.3]	the mobile telecommunications device being further configured to: write driving information to the short term memory at a predetermined update rate during the driving period in a predetermined sequence; and,
	[9.4]	overwrite the driving information previously written to the short term memory in accordance with the predetermined sequence.
10	[10.1]	A mobile telecommunications device according to claim 9, wherein the mobile telecommunications device is controlled by the downloaded application to control the mobile device to detect an occurrence of a predetermined event and
	[10.2]	in response transfer data from the short term memory to the long term memory.
11	[11]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to manage voice-calls incoming to the mobile telecommunications device during a driving period.
12	[12]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to enable a hands-free mode of operation on detection of the driving period.

Claim	Identifier	Claim Language
13	[13]	A mobile telecommunications device according to claim 12, wherein the hands-free mode of operation comprises enabling voice-activated commands on the mobile device.
14	[14.1]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to detect the occurrence of a predetermined event of significance, such as a crash, and
	[14.2]	in response to store driving information associated with that event to the memory.
15	[15.1]	A mobile telecommunications device according to claim 2, wherein the device is controlled by the downloaded application to detect the occurrence of a predetermined event of significance, such as a crash, and
	[15.2]	in response to transmit driving information associated with that event via the wireless telecommunication module to a remote data-logging system.
16	[16]	A mobile telecommunications device according to claim 2, wherein the at least one predetermined action comprises providing the user with options to control the mobile device to take further actions.
17	[17]	A mobile telecommunications device according to claim 1, further configured to: interface with an external device, the external device having access to external driving information associated with a condition of the vehicle; and, to receive at least a portion of the external driving information from the external device.
18	[18]	A mobile telecommunications device according to claim 17, further arranged to interface with the external device wirelessly.

Claim	Identifier	Claim Language
19	[19]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device utilizes its own power supply.
20	[20]	A mobile telecommunications device according to claim 1, wherein the mobile telecommunications device is a smartphone.
21	[21.1]	A non-transitory computer readable medium having instructions comprising a software application stored thereon, wherein the instructions are configured to be executed on a processor of a mobile telecommunications device to enable the mobile telecommunications device to log driving information associated with a driver of a vehicle, the mobile telecommunications device including
	[21.2a]	a display;
	[21.3]	a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;
	[21.4]	the processor; and
	[21.5]	a memory, wherein the instructions, upon execution by the processor, enable the mobile telecommunications device to:
	[21.2b]	present a user interface on the display;
	[21.6]	determine, based on at least one of the inputs received by the user interface and/or sensor data from the sensor set, a start of a driving period during which the mobile telecommunications device is removably attached to a vehicle and the vehicle is being driven by the driver;
	[21.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven;

Claim	Identifier	Claim Language
	[21.8]	store a selection of the driving information to the memory; and
	[21.9]	generate a driving score associated with the driver,
	[21.10]	wherein the driving information is derived without data from vehicle sensors.
22	[22]	A non-transitory computer readable medium according to claim 21, wherein execution of the instructions further enables the mobile telecommunications device to detect occurrence of a predetermined event and in response take at least one predetermined action.
23	[23]	A non-transitory computer readable medium according to claim 22, wherein predetermined action is storing driving information associated with that event to the memory.
24	[24]	A non-transitory computer readable medium according to claim 22, wherein predetermined action is storing driving information captured at a higher sampling rate than when an event is not detected.
25	[25]	A non-transitory computer readable medium according to claim 22, wherein predetermined action is transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system.
26	[26.1]	A non-transitory computer readable medium according to claim 22, wherein the predetermined action comprises providing feedback to a user to indicate that an event has been detected,
	[26.2]	the mobile telecommunications device being configured, via execution of the instructions, to receive a user interaction to confirm or deny whether the detected event has actually occurred following said feedback.
27	[27.1]	A non-transitory computer readable medium

Claim	Identifier	Claim Language
		according to claim 26, wherein the feedback comprises notifying a user that a further action has been scheduled, and will be taken within a predetermined period,
	[27.2]	the mobile telecommunications device being further configured to receive a user interaction to confirm or deny whether the further scheduled action should be taken within a predetermined period.
28	[28.1]	A non-transitory computer readable medium according to claim 22, wherein the predetermined action comprises communicating to a remote system that an event has been detected,
	[28.2]	wherein execution of the instructions further enables the mobile telecommunications device to receive from the remote system a request to transmit to the remote system selected portions of the driving information associated with the detected event.
29	[29]	A non-transitory computer readable medium according to claim 22, wherein execution of the instructions further enables the mobile telecommunications device to manage voice-calls incoming to the mobile telecommunications device during a driving period.
30	[30]	A non-transitory computer readable medium according to claim 22, wherein execution of the instructions further enables the mobile telecommunications device to enable a hands-free mode of operation on detection of the driving period.
31	[31]	A non-transitory computer readable medium according to claim 30, wherein the hands-free mode of operation comprises enabling voice-activated commands on the mobile device.
32	[32.1]	A non-transitory computer readable medium according to claim 22, wherein execution of the instructions further enables the mobile

Claim	Identifier	Claim Language
		telecommunications device to detect the occurrence of a predetermined event of significance, such as a crash, and
	[32.2]	in response to store driving information associated with that event to the memory.
33	[33.1]	A non-transitory computer readable medium according to claim 22, wherein execution of the instructions further enables the mobile telecommunications device to detect the occurrence of a predetermined event of significance, such as a crash, and
	[33.2]	in response to transmit driving information associated with that event via the wireless telecommunication module to a remote data-logging system.
34	[34]	A non-transitory computer readable medium according to claim 22, wherein the at least one predetermined action comprises providing the user with options to control the mobile device to take further actions.
35	[35.1]	A non-transitory computer readable medium according to claim 21, wherein the memory comprises: a long-term memory for persistently storing driving information and a short-term memory for transiently storing driving information,
	[35.2]	wherein the short-term memory receives driving information at a higher update rate than the long-term memory,
	[35.3]	wherein execution of the instructions further enables the mobile telecommunications device to: write driving information to the short-term memory at a predetermined update rate during the driving period in a predetermined sequence; and,
	[35.4]	overwrite the driving information previously written to the short-term memory in accordance with the

Claim	Identifier	Claim Language
		predetermined sequence.
36	[36]	A non-transitory computer readable medium according to claim 35, wherein execution of the instructions further enables the mobile telecommunications device to detect an occurrence of a predetermined event and in response transfer data from the short-term memory to the long-term memory.
37	[37]	A non-transitory computer readable medium according to claim 21, wherein execution of the instructions further enables the mobile telecommunications device to: interface with an external device, the external device having access to external driving information associated with a condition of the vehicle; and, receive at least a portion of the external driving information from the external device.
38	[38]	A non-transitory computer readable medium according to claim 37, further arranged to interface with the external device wirelessly.
39	[39]	A non-transitory computer readable medium according to claim 21, wherein the mobile telecommunications device utilizes its own power supply.
40	[40]	A non-transitory computer readable medium according to claim 21, wherein the mobile telecommunications device is a smartphone.
41	[41]	A non-transitory computer readable medium according to claim 21, wherein the processing step comprises determination of at least one of: vehicle acceleration events and vehicle braking events.
42	[42.1]	A non-transitory computer readable medium according to claim 41, wherein processing step comprises determination of vehicle swerving events and

Claim	Identifier	Claim Language
	[42.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
43	[43]	A non-transitory computer readable medium according to claim 21, wherein the processing step comprises determination of both vehicle acceleration events and vehicle braking events.
44	[44.1]	A non-transitory computer readable medium according to claim 43, wherein processing step comprises the determination of vehicle swerving events and
	[44.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
45	[45.1]	A non-transitory computer readable medium according to claim 21, wherein the mobile telecommunications device further comprises a proximity sensor and
	[45.2]	the instructions, upon execution by the processor, enable the mobile telecommunications device to detect the proximity of the mobile telecommunications device to the vehicle.
46	[46.1]	A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device comprising:
	[46.2]	a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;
	[46.3]	a user interface;
	[46.4]	a processor and;
	[46.5]	a memory;
	[46.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from

Claim	Identifier	Claim Language
		the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use;
	[46.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and
	[46.8]	store a selection of the driving information to the memory;
	[46.9]	wherein the driving information is derived without data from the vehicle sensors and
	[46.10]	the mobile telecommunications device is configured to process the sensor data by determination of at least one of: vehicle acceleration events; and vehicle braking events;
	[46.11]	wherein the determining of such events occurs when data from the sensor set accords with predefined threshold values; and
	[46.12]	wherein the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.
47	[47.1]	A mobile telecommunications device according to claim 46, wherein the mobile telecommunications device is configured to process the sensor data by determination of vehicle swerving events and
	[47.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
48	[48]	A mobile telecommunications device according to claim 46, wherein the mobile telecommunications device is configured to process the sensor data by determination of both vehicle acceleration events and vehicle braking events.
49	[49.1]	A mobile telecommunications device according to

Claim	Identifier	Claim Language
		claim 48, wherein the mobile telecommunications device is configured to process the sensor data by determination of vehicle swerving events and
	[49.2]	the determination of such events occurs when data from the sensor set accords with preset parameters.
50	[50.1]	A mobile telecommunications device according to claim 46, wherein the mobile telecommunications device further comprises a proximity sensor and
	[50.2]	the mobile telecommunications device is configured, upon execution of the instructions by the processor, to enable the mobile telecommunications device to detect the proximity of the mobile telecommunications device to the vehicle.
51	[51.1]	A non-transitory computer readable medium having instructions comprising a software application stored thereon, wherein the instructions are configured to be executed on a processor of a mobile telecommunications device to enable the mobile telecommunications device to log driving information associated with a driver of a vehicle, the mobile telecommunications device including
	[51.2a]	a display;
	[51.3]	a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;
	[51.4]	the processor; and
	[51.5]	a memory, wherein the instructions, upon execution by the processor, enable the mobile telecommunications device to:
	[51.2b]	present a user interface on the display;
	[51.6]	determine, based on at least inputs received by the user interface and sensor data from the sensor set, a start of a driving period during which the mobile telecommunications device is removably attached to

Claim	Identifier	Claim Language
		a vehicle and the vehicle is being driven by the driver;
	[51.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven;
	[51.8]	store a selection of the driving information to the memory; and
	[51.9]	generate a driving score associated with the driver,
	[51.10]	wherein the driving information is derived without data from vehicle sensors and comprises the determination of at least one of: vehicle acceleration events; and vehicle braking events;
	[51.11]	wherein the determination of such events occurs when data from the sensor set accords with predefined threshold parameters.
52	[52.1]	A non-transitory computer readable medium according to claim 51, wherein the derived driving information may further comprise the determination of vehicle swerving events and
	[52.2]	the determination of such events occurs when data from the sensor set accords with predefined threshold parameters.
53	[53.1]	A non-transitory computer readable medium according to claim 51, wherein the mobile telecommunications device further includes a proximity sensor, and
	[53.2]	the instructions, upon execution by the processor, further enable the mobile telecommunications device to detect the proximity of the mobile telecommunications device to the vehicle.
54	[54.1]	A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device comprising:
	[54.2]	a sensor set comprising an image sensor, an audio

Claim	Identifier	Claim Language
		sensor, an accelerometer or a positioning module, or a combination thereof;
	[54.3]	a user interface;
	[54.4]	a processor and;
	[54.5]	a memory;
	[54.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably affixed to the vehicle and the vehicle is in use;
	[54.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven; and
	[54.8]	store a selection of the driving information to the memory;
	[54.9]	wherein the driving information is derived without data from the vehicle sensors, and
	[54.10]	the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.
55	[55.1]	A mobile telecommunications device configured to log driving information associated with a vehicle, the mobile telecommunications device comprising:
	[55.2]	a sensor set comprising an image sensor, an audio sensor, an accelerometer or a positioning module, or a combination thereof;
	[55.3]	a user interface;
	[55.4]	a processor and;
	[55.5]	a memory;

Claim	Identifier	Claim Language
	[55.6]	the mobile telecommunications device being configured to: determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably affixed to the vehicle and the vehicle is in use;
	[55.7]	process the sensor data from the sensor set during the driving period to derive driving information associated with how the vehicle is driven,
	[55.8]	the processing involving the use of a neural network on the mobile telecommunications device to determine whether the driving information represents an acceptable or unacceptable driving pattern; and,
	[55.9]	store a selection of the driving information to the memory;
	[55.10]	wherein the driving information is derived without data from the vehicle sensors,
	[55.11]	and the mobile telecommunications device is controlled by a downloaded application to control the mobile device to process the driving information to generate a driving score associated with a particular driver.

United Services Automobile Association (“Petitioner” or “USAA”) petitions for *Inter Partes* Review (“IPR”) of claims 1-55 (“Challenged Claims”) (“the Challenged Claims”) of U.S. Patent No. 10,198,879 (“the ’879 Patent”).

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

USAA certifies that the ’879 Patent is available for IPR. USAA is not barred or estopped from requesting this review challenging the Challenged Claims on the below-identified grounds. USAA was served with a complaint of infringement of the ’879 Patent less than one year ago. USAA-1004.

B. Challenge and Relief Requested

USAA requests IPR and cancellation of the Challenged Claims on the grounds below. In support, a declaration from Dr. William Michalson¹ (USAA-1003) is provided. USAA-1003, ¶¶1-323.

Ground	Claims	Basis: §103
1A	1-3, 5, 8, 16-23, 25, 28, 34, 37-54	Peng, Chatterjee
1B	4, 24	Peng, Chatterjee, Tamir
1C	6, 9, 10, 14, 15, 26, 32, 33, 35, 36	Peng, Chatterjee, Katayama
1D	7, 27	Peng, Chatterjee, Katayama, Balachandran

¹ Dr. Michalson is a professor in Robotics Engineering at the Worcester Polytechnic Institute.

Ground	Claims	Basis: §103
1E	11-13, 29-31	Peng, Chatterjee, Riemer
1F	55	Peng, Chatterjee, Berkobin

The priority date of the '879 Patent is 03/09/2017 (“Critical Date”), for the reasons provided herein (§II.C, *infra*). Although the '879 patent claims priority to earlier filed documents,² the Challenged Claims are not entitled to the earlier-claimed priority dates. USAA-1003, ¶¶14, 18, 61-93. Accordingly, the applied references are prior art:

Reference	Date(s)	Basis
Peng	6/29/2011	§102(e)
Katayama	4/23/2008	§102(b)
Chatterjee	5/27/2010	§102(b)
Tamir	2/1/2007 10/26/2010	§102(b) §102(a)
Balachandran	6/6/2000	§102(b)
Riemer	08/26/2010	§102(b)
Berkobin	10/16/2008	§102(b)

C. Claim Construction

² In its Infringement Complaint, Patent Owner (“PO”) stated “[t]he '879 Patent ... claims priority to PCT Application No. PCT/GB2011/052492, filed on December 15, 2011.” USAA-1004, 10.

Because the Challenged Claims are obvious under any reasonable interpretation, no express constructions are required in this proceeding. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); USAA-1068-1073.

Claim 1 recites:

determine, based on at least one of the inputs received by the user interface and sensor data from the device's sensor set, a start of a driving period during which the mobile device is removably attached to the vehicle and the vehicle is in use³

Based on plain meaning, the recited “driving period” references a time period “during which [a] mobile device is removably attached to the vehicle and the vehicle is in use.” USAA-1003, ¶¶94-96. Though the namesake of the “driving period” suggests driving, because the two claim parameters defining the “driving period” are “removably attached...*and* the vehicle is in use,” the claim leaves open the possibility of the driving period corresponding to the beginning, middle, or end of a vehicle’s operation. *Id.* The ’879 specification is similarly unbounded, as it expressly recognizes several driving period options untethered from, e.g., the beginning of the user driving the vehicle: “the mobile device [] register[s] the start of a driving period in response to an initialisation input,” which may be “the user manually executing the application on the mobile device[,]” and “the mobile device being installed to the vehicle and/or the vehicle being driven.” USAA-1001,

³ Claims 21, 46, 51, and 54-55 recite the same/similar language.

3:32-62; USAA-1003, ¶95.

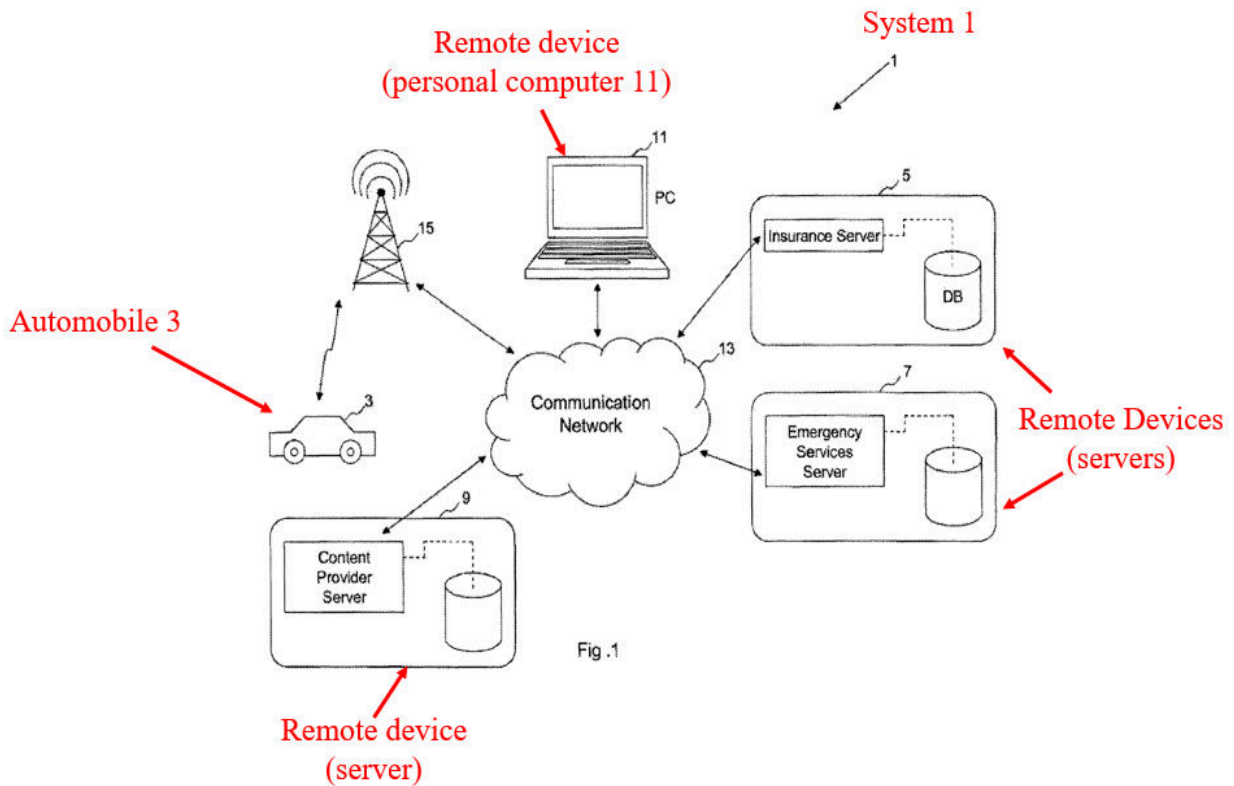
Thus, this claim term establishes just two “driving period” attributes: (1) “the mobile device is removably attached to the vehicle” and (2) “the vehicle is in use.” USAA-1003, ¶96. These attributes may be satisfied by a start of a data collection period, whether at the onset of vehicle driving, before, or thereafter. *Id.*

II. THE '879 PATENT

A. Specification

The '879 Patent is directed to “methods and systems for logging driving information associated with a vehicle when driven.” USAA-1001, Abstract. A mobile device is “adapted for installation to a vehicle” and logs driving information, such as “video footage associated with how a vehicle is driven.” *Id.*, 1:22-30. The driving information can be used to “determine the cause of an accident,” “modify driver behaviour” or “determine insurance premiums.” *Id.*; USAA-1003, ¶¶55-57.

Figure 1 shows a system 1 placed in automobile 3. USAA-1001, 13:18-56; USAA-1003, ¶58.



USAA-1001, Fig. 1 (annotated)

B. Prosecution History

During prosecution, the Examiner rejected the claims over U.S. Pub. Nos. 2010/0030540 (“Choi”), 2010/0157061 (“Katsman”), and 2012/0166583 (“Koonce”). USAA-1002, 117-36. This petition addresses claim features distinguished during prosecution using new combinations of prior art, none of which were previously considered. USAA-1003, ¶60.

C. Priority Claim

1. Peng is Prior Art

The '879 patent claims priority to three foreign priority documents, P1-P3⁴, each filed before Peng and yet each lacking written description support for the '879 patent claims. USAA-1003, ¶¶61-93. Specifically, these priority documents each fail to provide support for at least elements [1.9]-[1.10] of independent claim 1 (and the same/similar limitations in independent claims 21, 46, 51, 54, and 55). *Id.*

For [1.9]/[21.10]/[46.9]/[51.10]/[54.9]/[55.10], by requiring the driving information to be derived “**without data from vehicle sensors**,”⁵ PO structured this clause as a negative limitation. *Id.* None of P1-P3, the '879 specification, nor its priority documents, U.S. Application Nos. 13/994,455 (“the ‘455 application”) and 15/061,910 (“the ‘910 application”), offer support for this negative limitation. USAA-1003, ¶63.

For [1.10]/[21.9]/[46.12]/[51.9]/[54.10]/[55.11], P1-P3 does not support requiring the mobile telecommunications device to “generate a driving score associated with a particular driver” or the driver. USAA-1003, ¶64 (the phrase and/or functionality of a driving score not even mentioned).

Thus, Peng is prior art. USAA-1003, ¶¶70-93.

⁴ The '879 patent claims priority to P1-P4 (USAA-1503-6). P4 was not considered in this analysis because it was filed after Peng.

⁵ Unless otherwise indicated, all emphasis has been added herein.

a) Case Law

For positively-articulated limitations, to satisfy the written description requirement, a patent's specification must "reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); USAA-1003, ¶¶65-69. Such possession must be "shown in the disclosure." *Id.* It is not enough that a claimed invention is "an obvious variant of that which is disclosed in the specification." *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

This requirement is heightened for negatively-articulated limitations, as negative limitations require explicit support in the specification – mere silence is insufficient under 35 U.S.C. §112. *Novartis v. Accord Healthcare*, Docket No. 2021-1070 (June 21, 2022). The failure or omission of reference to a claimed object does not constitute disclosure of the negative limitation. *See Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1288 (Fed. Cir. 2021); MPEP § 2173.05(i) (9th ed. Rev. 10.2019, June 2020).

b) The '879 Specification and its U.S. Priority Document also Fail to Provide Support for [1.9] and [1.10].

Not only does P1-P3 lack support for the negative limitations of elements [1.9]/[21.10]/[46.9]/[51.10]/[54.9]/[55.10], but the '879 specification and its priority documents are similarly deficient, as each also fails to offer support for the negative limitations. USAA-1003, ¶¶84-93.

Furthermore, the '879, '455 and '910 specifications indicate that the mobile telecommunications device receives data from vehicle sensors, which is contrary to the negative limitations of elements [1.9]/[26.9]/[27.10]/[21.10]/[46.9]/[51.10]/[54.9]/[55.10]. USAA-1003, ¶¶84-93; USAA-1001, 1:64, 9:57-10:9, 10:52-53, 11:19-31, 11:58-12:15, 22:62-23-15,.

And, P1-P3 also lack support for “generat[ing] a driving score associated with a particular driver,” as required by limitations [1.10]/[21.9]/[46.12]/[51.9]/[54.10]/[55.11]. USAA-1003, ¶¶70-83.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1A] – Peng and Chatterjee render Claims 1-3, 5, 8, 16-23, 25, 28, 34, 37-54 Obvious

1. Analysis

a) Peng

Peng is directed to “collecting and evaluating driving behavior data and/or driving environment data, and providing feedback based on such evaluated data”

using “a handheld mobile device [(HMD)], e.g., a smart phone” for “a variety of applications.” USAA-1005, [0001]-[0004], [0019], [0165], Abstract; USAA-1003, ¶¶97-106.

Peng’s Fig. 1 illustrates an exemplary “[HMD] located in a vehicle 12,” and “a touch screen” and/or “input/output devices 38,” enabling generation of sensor data and receipt of user input. USAA-1005, [0019]-[0020], [0010], [0030]-[0031]. The HMD 10 can “perform[] continuously” steps such as “collect driving data,” “process driving data,” “display feedback,” and/or “store data” during a collection session to, e.g., provide “real time feedback.” USAA-1005, [0072]-[0073], Fig. 3.

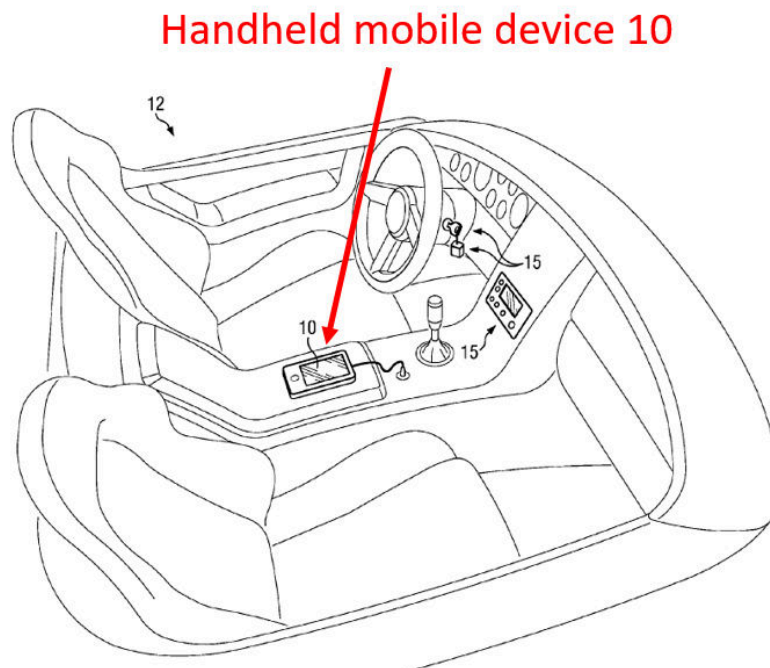
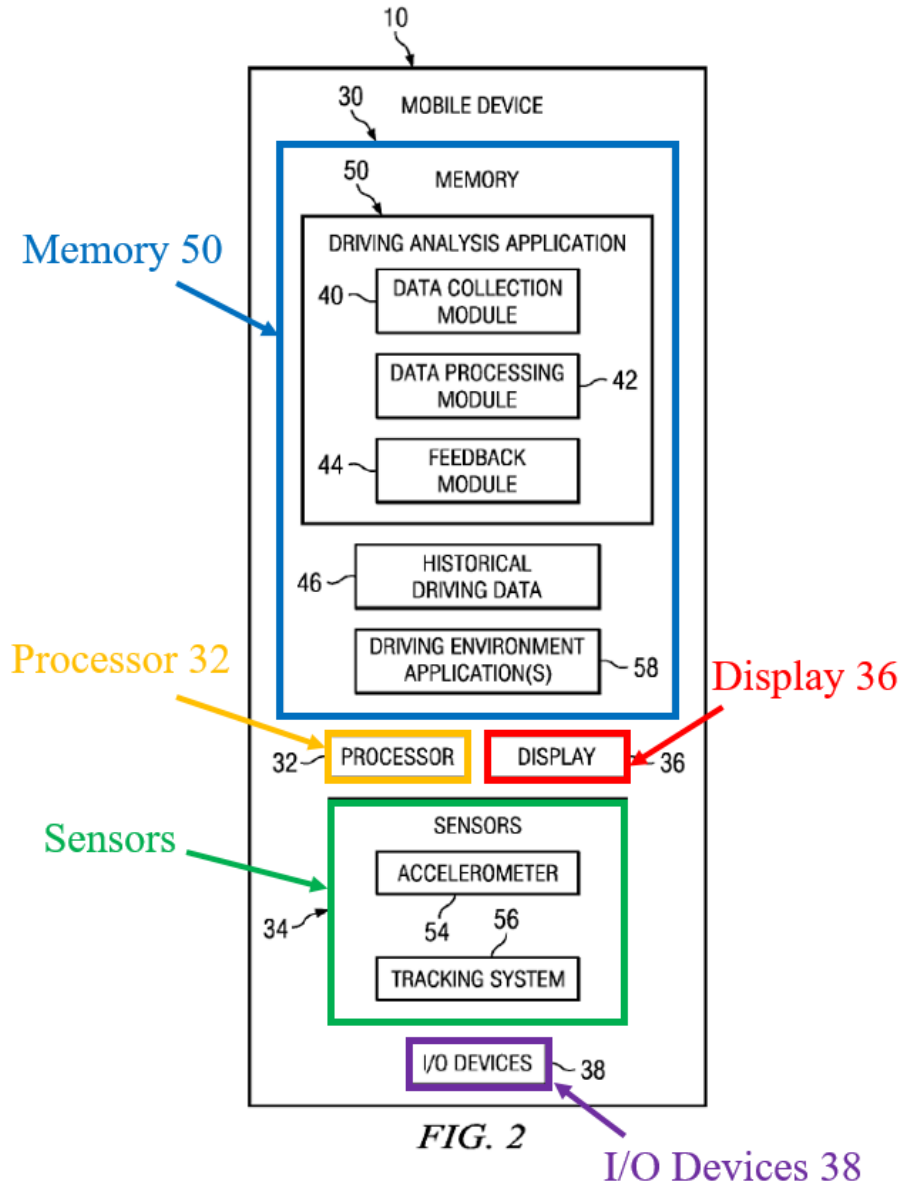


FIG. 1

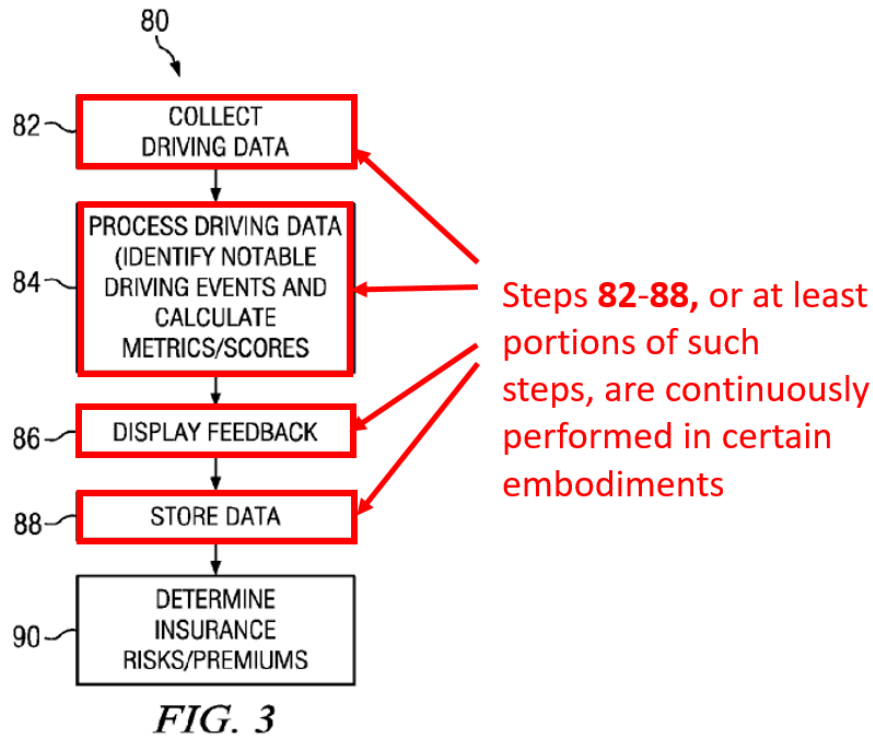
USAA-1005, Fig. 1 (annotated)

As shown in Fig. 2, Peng's "[HMD] may include a memory 30, processor 32, one or more sensors 34, a display 36, and input/output devices 38." USAA-1005, [0025]. Sensors, such as a "built-in accelerometer" and "a location tracking system," "collect...data regarding driving behavior and/or...environment." *Id.*, [0021], [0077], [0029], [0034]. HMD 10 includes memory 30 configured for "short-term storage...and long-term storage of certain data" of "any data," "including raw or filtered data...and/or any of the metrics, scores, or other data calculated..." *Id.*, [0058].



USAA-1005, Fig. 2 (annotated)

HMD 10 can “perform continuously” steps 82-88, or portions thereof, shown in Fig. 3, to provide driver feedback, e.g., “real time feedback.” USAA-1005, [0071]-[0073]; USAA-1003, ¶100.



USAA-1005, Fig. 3 (annotated)

HMD 10 can perform the steps shown in Fig. 4. USAA-1005, [0075]-[0077], [0152]-[0153], [0057]-[0065], Figs. 4, 6A; USAA-1003, ¶¶101-106. Device 10 first ensures proper orientation (102) when determining whether it is ready to collect driving data (104). *Id.* In doing so, based on sensor data and leveraging user input, HMD 10 “interact[s] with the user to adjust the [HMD] such that the orientation...is suitable for collecting driving data.” USAA-1005, [0076], Fig. 4. HMD 10 can “initiate and/or manage the storage of any of the data collected...at step 104 (e.g., raw data or filtered raw data) and/or any of the metrics, scores, or

other data calculated or processed by data processing module 42 at steps 106-112,”

USAA-1005, [0142].

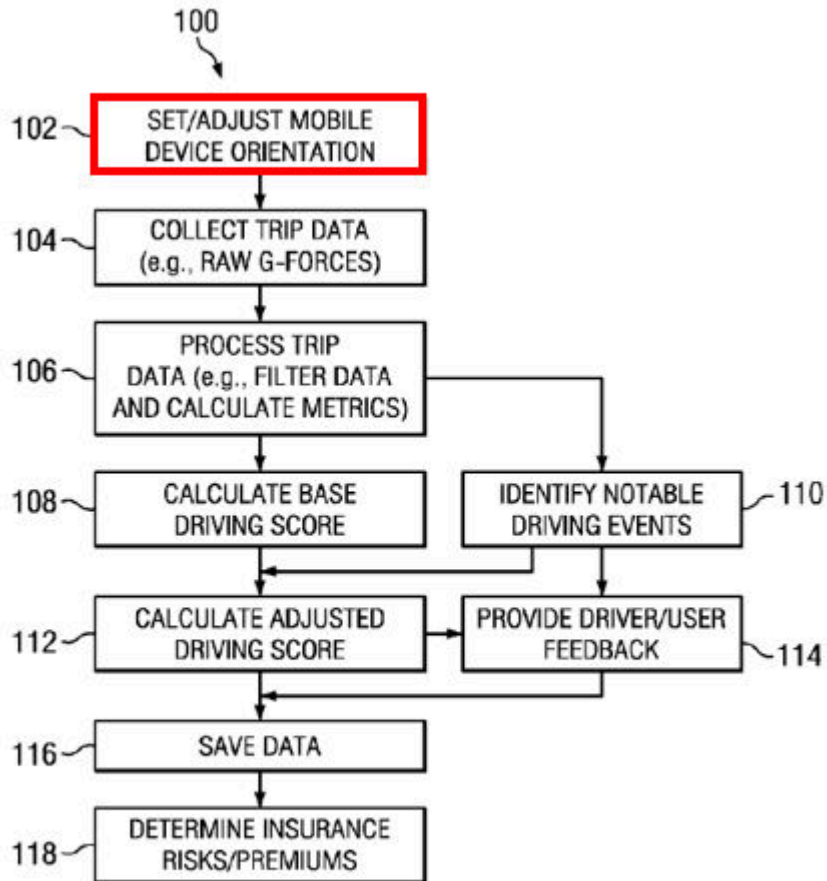


FIG. 4

USAA-1005, Fig. 4 (annotated)

As shown in Fig. 6A, a person of ordinary skill in the art at the time of the '879 Patent ("POSITA")⁶ would have understood that the user may be prompted for input through its display by "a screen 200 of a device orientation feature" to

⁶ USAA-1003, ¶¶14-15 (defining a POSITA)

position the device, e.g., “place [the] device...in a cup holder,” to ensure proper orientation suitable for collecting driving data, which starts only upon determining proper orientation. USAA-1005, [0151], [0077], [0036], Fig. 6A; USAA-1003, ¶102.

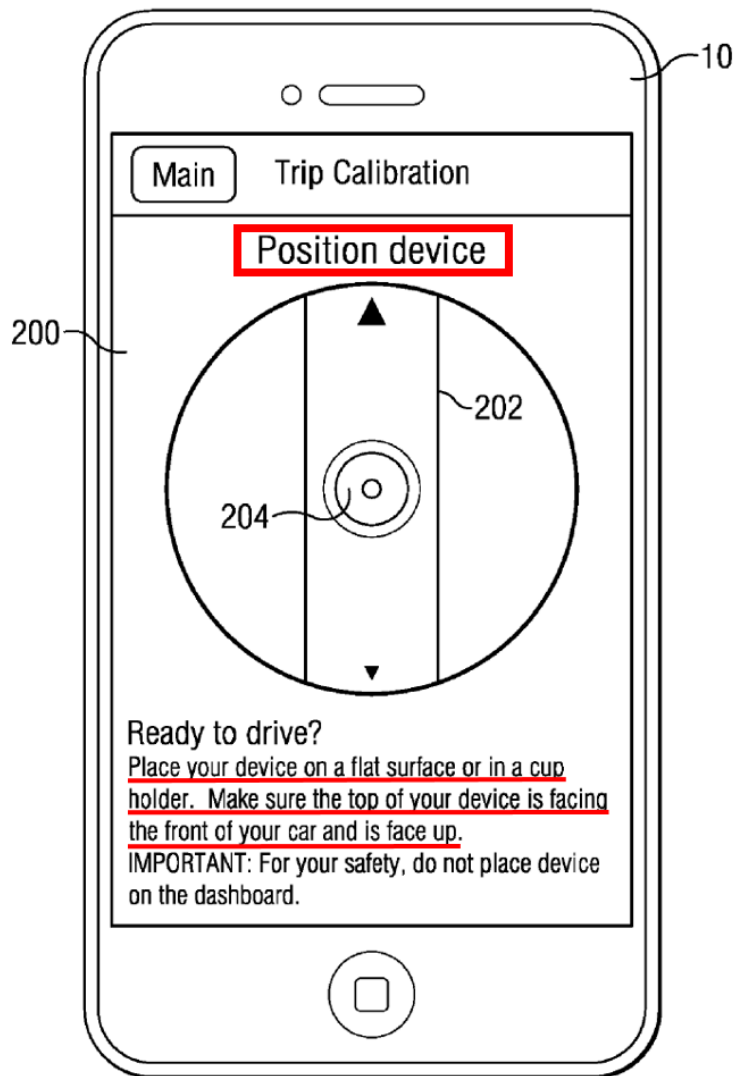


FIG. 6A

USAA-1005, Fig. 6A (annotated)

HMD 10 can also determine if it is and continues to be “properly oriented”

based on the mobile device's sensor data using, e.g., "GPS and position information." USAA-1005, [0036]-[0037], [0152], [0040], [0067], [0029], [0077], Fig. 6A. Interruptions can occur if the sensors detect that the device is improperly oriented during data collection. USAA-1005, [0036]-[0037], [0040]-[0041], [0152]-[0153]; USAA-1003, ¶103.

"[HMD] 10 may include...a driving analysis application," which "may be downloaded via the Internet," to "process any or all of [the] driving data collected by [HMD]... to calculate one or more driving behavior metrics and/or scores based on such collected driving data," while the vehicle is in use, e.g., "acceleration, braking, and cornering metrics," and "identify [NDE]." *See e.g.*, USAA-1005, [0020]-[0023], [0026], [0068], [0044]-[0054], [0069], [0074], [0136]-[0145], [0155]-[0156]; USAA-1003, ¶104.

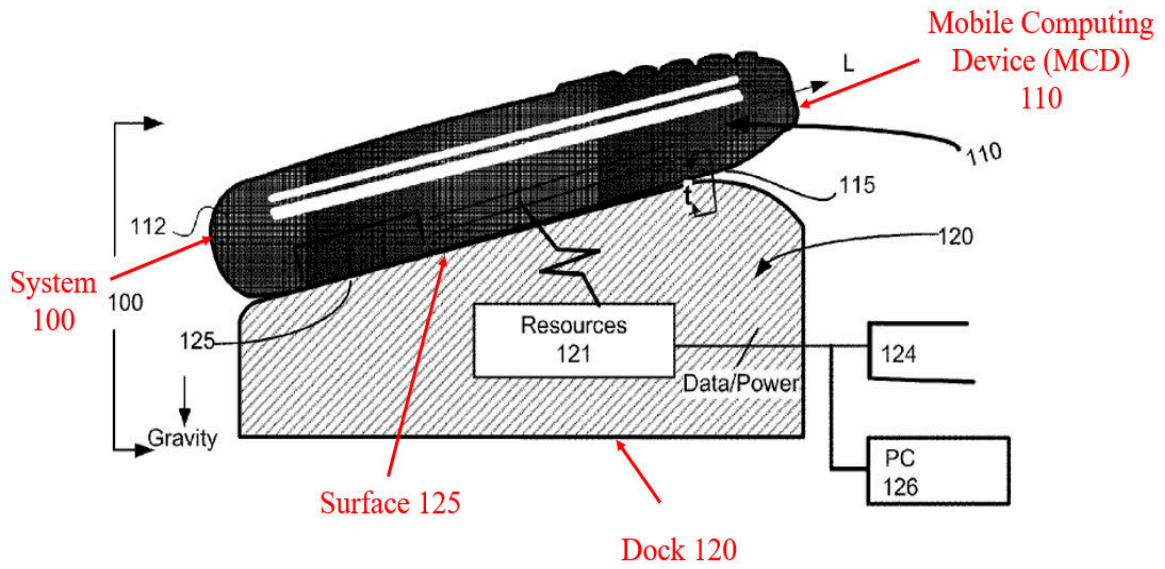
HMD can further process driving data (e.g., metrics/scores) to determine NDE occurrences/severities. USAA-1005, [0022]. As Peng does not require input or consideration of vehicle sensor data, a POSITA would have understood from Peng that these driving behavior metrics and/or scores can be derived without data from vehicle sensors. USAA-1003, ¶¶104-106. HMD may share such data with others, e.g., "an insurance company." *Id.*; *see e.g.*, USAA-1005, [0024].

b) Chatterjee

Chatterjee describes a system that includes “a mobile computing device” (MCD), which can be a “smart phone.” USAA-1006, [0090]-[0091]. Chatterjee also describes integration of an accessory device, such as “a dock or docking station,” which can “signal...power or data to [MCD].” USAA-1006, [0064], [0057], Abstract, [0270], [0047], Figs. 1A-1B, 16A-20, 25, 29-34C; USAA-1003, ¶¶107-109.

In FIG. 1A, Chatterjee’s MCD 110 is retained by a dock 120. USAA-1006, [0065], [0107], Figs. 1B, 5-6, 16A-20, 25, 29-34C. Chatterjee’s “docking station includes a housing with surface 125 to “receive and retain the [MCD 110].” USAA-1006, Abstract, [0057]. “[D]ock 120 utilizes physical support structures...to retain the MCD 110 in a docked or mated position,” “such as “magnetic clasps,” or “mechanical retention features.” USAA-1006, [0066], [0201]-[0214].

Chatterjee explains that its MCD and/or dock can detect when the MCD is docked. USAA-1006, [0151]-[0152], [0182]. The MCD can “include[] one or more detectors 560 (or sensors) for detecting orientation or position of the MCD 500 when the device is docked,” and that orientation can “configuring operations or behavior of one or both devices.” USAA-1006, [0065], [0092], [0097]-[0098], [0104], [0106], [0174]-[0177], [0182]-[0200].



USAA-1006, Fig. 1A (annotated)

c) Peng-Chatterjee

Peng's HMD (§III.A.1(a)) determines a start of a driving period by assessing whether the HMD is properly oriented by, for example, using sensor data (e.g., GPS, position information). USAA-1005, [0075]-[0077], [0152]-[0153], [0057]-[0065], Figs. 4, 6A; USAA-1003, ¶127. Once properly oriented, Peng's HMD is configured to "collect[] and evaluat[e] driving behavior data and/or driving environment data, and provid[e] feedback," including calculating and providing "driving behavior metrics and/or scores." USAA-1005, [0001], [0068], [0021]; USAA-1003, ¶¶128-131. Data collection can be interrupted if HMD becomes improperly oriented. USAA-1005, [0036]-[0037], [0040]-[0041], [0152]-[0153]; USAA-1003, ¶¶123-124. Despite this, Peng describes positioning the device unsecured, e.g., on

a flat surface of a console (Fig. 1) or in a cup holder (Fig. 6A), leaving the device vulnerable to orientation changes caused by vehicular movements. USAA-1003, ¶129.

Based on Peng, a POSITA would have found obvious to improve Peng's system and apply the user interface inputs and sensor detection in Peng's HMD to *prevent* improper orientation from occurring. USAA-1003, ¶132; USAA-1005, [0036]-[0037], [0067], [0152]-[0153]. A POSITA would have readily understood that an unsecured phone vulnerable to orientation changes. USAA-1003, ¶132; USAA-1005, Figs. 1, 6A. A POSITA would have also sought practical solutions to ensure reliable modes of charging of the mobile device. USAA-1003, ¶133 (citing USAA-1507, 291; USAA-1508, 1).

Hence, a POSITA would have found it obvious to improve Peng's system by leveraging a dock, as taught by Chatterjee, to securely attach the mobile device during vehicle use. USAA-1003, ¶¶127, 138-147; USAA-1006, Abstract, [0066], [0003]. Also, a POSITA would have been particularly inclined toward a dock configured as suggested by Chatterjee to modify and/or detect orientation of the HMD and the docked/undocked status given Peng's disclosure of orientation detection. *Id.* In the combination, Chatterjee's dock would have been positioned within a vehicle in a suitable location to releasably attach the mobile device to the vehicle when in use. *Id.* Since mobile phones were often used in moving vehicles, the

dock would have advantageously secured the device to a convenient location in a vehicle. USAA-1003, ¶134; USAA-1502, [0003], [0016], [0006], [0014]; USAA-1006, [0270]; USAA-1516, [0036].

Chatterjee's dock is configured to "receive and retain the mobile computing device" in a mechanical, electrical, and/or logical manner. USAA-1006, Abstract, [0066], [0003], [0056]-[0057], [0060], [0064], [0069]-[0070]; USAA-1003, ¶135. For example, the dock can "utilize[] physical support structures" "to retain the MCD 110 in a docked or mated position." USAA-1006, [0066], [0074]. The dock can also "recharge or supply power to the mobile computing device." USAA-1006, [0003]. The "orientation of the MCD on the dock may be changed by the user for purpose of configuring operations or behavior of one or both devices." USAA-1005, [0036]-[0037], [0067], [0076], [0151]; USAA-1006, [0065].

A POSITA would have been motivated to obtain "proper alignment or orientation of [HMD] 10 within the automobile or vehicle" by removably attaching or affixing Peng's HMD 10 to the vehicle via Chatterjee's dock to prevent misalignment and potential disruptions to data collection. USAA-1003, ¶136; USAA-1005, [0036]-[0037], [0151], FIGS. 1, 6A; USAA-1006, [0002]-[0003], [0006], FIGS. 1-7. A POSITA would obviously to removably attach the mobile device to the vehicle because a person typically takes the device along when leaving a vehicle. *Id.* Furthermore, a POSITA would have leveraged Chatterjee's

teachings of using a system where the mobile device and/or the dock can logically (e.g., inductively) couple and communicate, e.g., detect whether the mobile device is docked and in its proper orientation/position. USAA-1003, ¶136; USAA-1006, [0092], [0097]-[0098], [0104], [0200]-[0232]. Thus, in the combination, the HMD would have prompted a user to dock and verified its proper positioning based on its docking status and orientation prior to collecting driving data. *Id.*

In this way, it would have been obvious to a POSITA to have extended Peng's teachings to incorporate the dock in the determination of a start of a driving period based on whether the HMD was properly docked during vehicle usage, as taught by Chatterjee. USAA-1003, ¶137. It would have been obvious to configure the combination device to "trigger[] the start and stop...of driving data collection" based on whether the device is removably attached (e.g., docked) to the dock when determining whether it is properly oriented. *Id.*; USAA-1005, [0036].

As illustrated below, a POSITA would have found it further obvious to configure Peng-Chatterjee to prompt user inputs by requesting that the user place the HMD in a proper orientation on the dock as a way to releasably, yet securely, affix the HMD to the vehicle and maintain the proper orientation when the vehicle is moving. USAA-1005, Fig. 6A; USAA-1006, [0066], [0205]; USAA-1003, ¶138. Accordingly, it would have been obvious that the combination device determines a start of a driving period based on user inputs (e.g., inputs to user

interface displayed prompts) for properly orienting the device and/or adjusting the device's orientation when releasably attaching (e.g., docking) the device to the dock. USAA-1003, ¶¶138-140; USAA-1006, [0174]-[0176], Fig. 15.

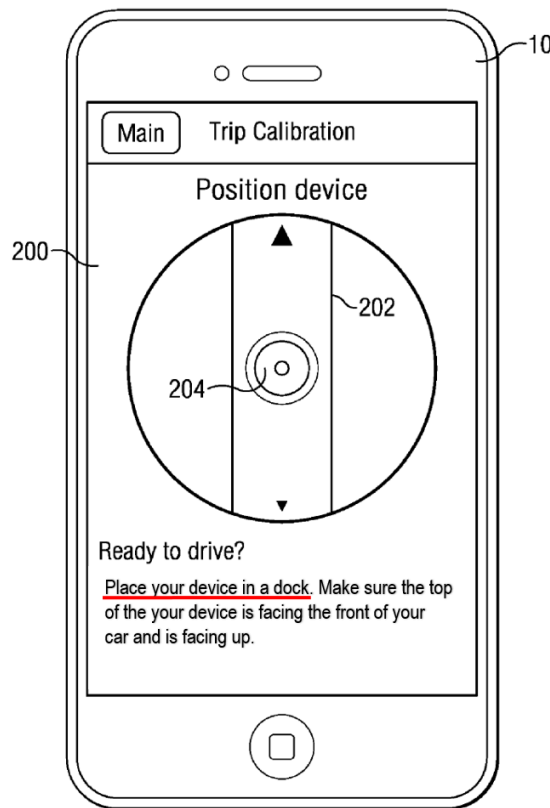


FIG. 6A

USAA-1005, Fig. 6A (modified to illustrate the combination)

Additionally, the combination would have been obviously configured to include one or more sensors (e.g., accelerometer and/or GPS sensors described by Peng) to determine the orientation angle and relative position status of the mobile

device with respect to the vehicle; it would have been obvious to a POSITA to have leveraged those same sensors to determine a start of a driving period, e.g., when the device is releasably attached (e.g., docked) during vehicle usage in at least two ways. USAA-1003, ¶¶141-144; USAA-1005, [0036]-[0038], [0151]-[0152], [0040], [0067], Fig. 6A; USAA-1006, [0092].

First, it would have obvious for a POSITA to have applied Peng's teachings of using the HMD's positional (e.g., GPS) sensor data in the combination to determine a start of a driving period when the HMD is properly docked during vehicle usage. USAA-1003, ¶¶142-143 (citing USAA-1032, 1-7); USAA-1005, [0037]; USAA-1006, [0092], [0097]-[0098].

Second, it would have obvious for a POSITA to have similarly applied Peng's teaching for using the combination device's accelerometer to determine a start of a driving period based on proper docking of the device during vehicle usage. USAA-1003, ¶144; USAA-1005, [0151]; Fig. 6A; USAA-1006, [0070], [0092], [0097]-[0098], [0104], [0106], [0182]-[0191], [0198]; USAA-1013, 3:1-10, 4:21-33, Figs. 1, 4; USAA-1003, ¶¶141-144.

The POSITA would have found obvious that enhancing Peng's system to implement a dock, as taught by Chatterjee, to determine a start of the driving period while the device is removably attached to a vehicle via a dock and while the vehicle is in use, would introduce multiple advantages, including:

1. increased reliability of securely holding the HMD and maintaining set orientation while the vehicle is in motion driving data collection (USAA-1003, ¶¶145-146; USAA-1006, [0066], [0070]; USAA-1005, [0036], [0040]);
2. enhanced utility in conveniently “supply[ing] power to the mobile computing device” while it is securely attached to the vehicle (USAA-1003, ¶147; USAA-1006, [0003], [0060], [0067]; USAA-1005, Fig. 1; USAA-1502, [0003]);
3. enhanced utility in logically linking the mobile device to the dock “through one or more connector-less connection” (USAA-1003, ¶148; USAA-1006, [0060], [0064], [0003], [0047]; USAA-1005, [0021], [0014], Fig. 5; USAA-1502, [0003]);
4. increased safety because, in the combination, when the HMD is being used by the driver of a moving vehicle, the dock can allow the device to be rigidly mounted to the vehicle (USAA-1003, ¶149; USAA-1005, Figs. 1, 6A; USAA-1006, [0066]; USAA-1502, [0003]; USAA-1516, Abstract, [0004]-[0005]);
5. increased convenience for a user to operate single-handedly the device while it is rigidly mounted to the vehicle (USAA-1003, ¶150; USAA-1005, Figs. 1, 6A; USAA-1006, [0192]; USAA-1502, [0007],

[0013], [0003]); and

6. reduced noise and error in the collected data and reduced complexity in processing the data by eliminating/minimizing movement of the HMD itself (USAA-1003, ¶151; USAA-1005, [0037]-[0038]; USAA-1516, [0036], [0038]).

These advantages would have motivated a POSITA to combine the teachings of Chatterjee and Peng in a manner enabling the combination device to determine a start of the driving period while the device is removably attached to a vehicle via a dock and while the vehicle is in use. USAA-1003, ¶¶145-152; USAA-1005, [0036]-[0037], Figs. 1, 5, 6A; USAA-1006, [0003], [0005], [0007], [0011], [0013]-[0014].

Configuring the proposed combination to leverage the teachings of Chatterjee and other related art for using and applying a dock in a vehicle was well within the skill of a POSITA, and merely involves the use of a known technique of attaching a dock to a vehicle and combining prior art elements according to known methods to yield the predictable results described above. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); USAA-1003, ¶153.

Furthermore, the elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination. USAA-1003, ¶154.

2. Claim 1

[1.1]

Peng-Chatterjee renders the preamble obvious. USAA-1003, ¶¶155-159.

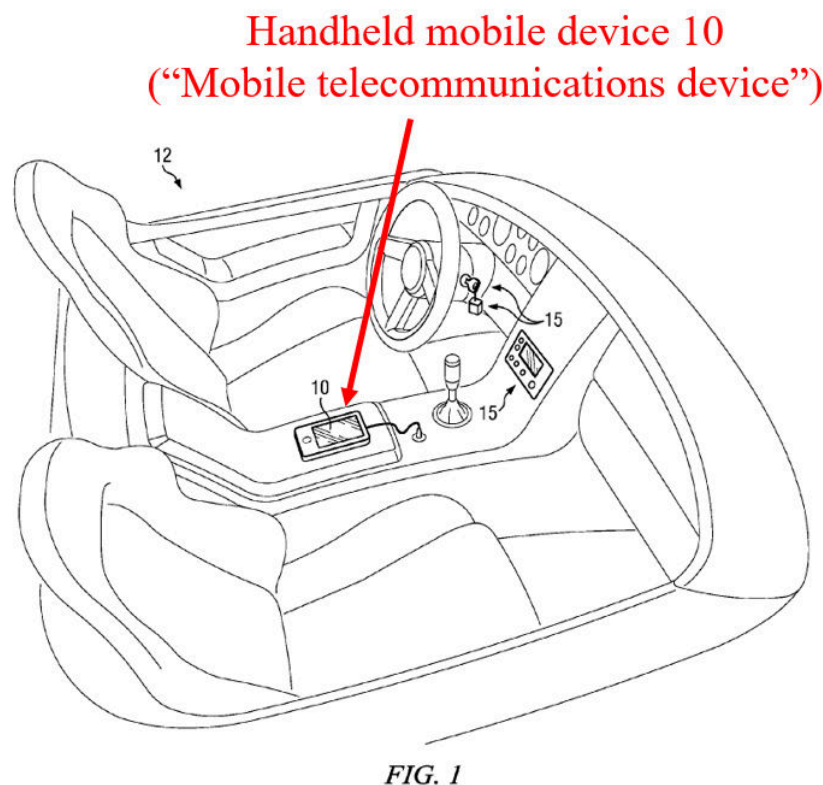
As shown below, Peng's HMD ("**mobile telecommunications device**") includes

"any type of portable or **mobile electronics device**," for example, "a smart phone,

such as an iPhone." USAA-1003, ¶155; USAA-1005, [0019], Fig. 1. Furthermore,

"data sources [are] accessible to [HMD 10] by...**telecommunication** links."

USAA-1005, [0033].



USAA-1005, Fig. 1 (annotated)

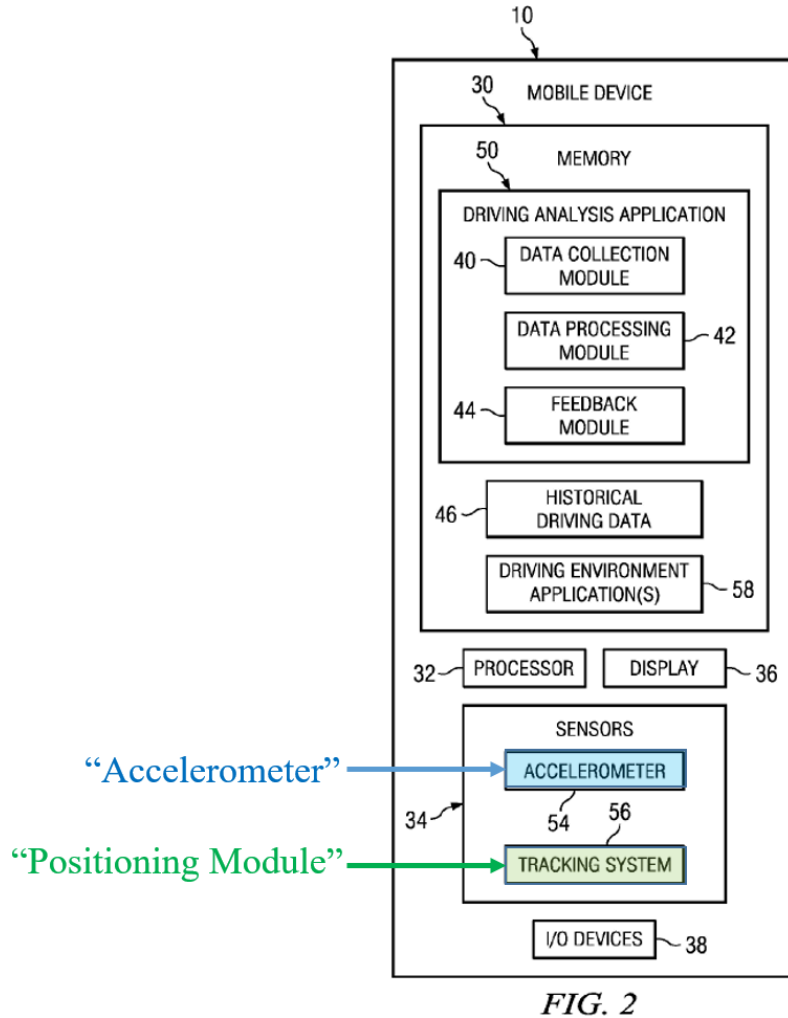
From this and related description, a POSITA would have found it obvious

that Peng-Chatterjee includes a mobile telecommunications device. USAA-1003, ¶156; USAA-1005, [0019] (“[HMD] 10”), [0033], Figs. 1, 5, 6A-6G.

A POSITA would have found obvious based on Peng’s disclosure (§III.A.1) to have configured Peng-Chatterjee to “provide one or more features of a driving analysis system, such as (a) **collection of driving data** (e.g., data regarding driving behavior and/or the respective driving environment)” (“*configured to log driving information associated with a vehicle*”). USAA-1005, [0020]; USAA-1003, ¶157. Furthermore, Peng-Chatterjee would have been obviously configured the HMD to “manage the collection of driving data, including driving behavior data and/or the driving environment data,” such as “collect[ing] such data from any number and types of data sources, including (a) data sources provided by [HMD]” USAA-1003, ¶¶157-158; USAA-1005, [0032]-[0033], [0042], [0020]-[0022], Figs. 1-2, 6A-6G.

[1.2]

A POSITA would have found obvious based on Peng’s disclosure to have configured the Peng-Chatterjee’s mobile device to include sensors (“*a sensor set*”), including an accelerometer (“*accelerometer*”), a location tracking system (“*positioning module*”), a camera (“*image sensor*”), and voice activated interfaces (“*audio sensor*”). USAA-1003, ¶¶159-160; USAA-1005, [0021], [0023], [0029] [0031], Fig. 2; *see also e.g.*, USAA-1036, 6-7, 103-104.



USAA-1005, Fig. 2 (annotated)

[1.3]

Peng-Chatterjee renders obvious a user interface. USAA-1003, ¶¶161-164. Peng discloses using “input/output devices 38 (e.g., a **touchscreen display 36, keys, buttons, and/or other user interfaces**).” USAA-1005, [0062]-[0063], FIGS. 6A-6G.

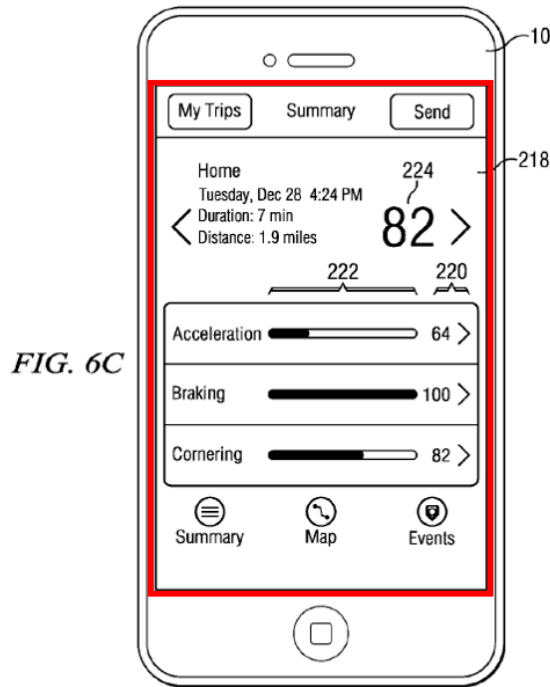


FIG. 6C

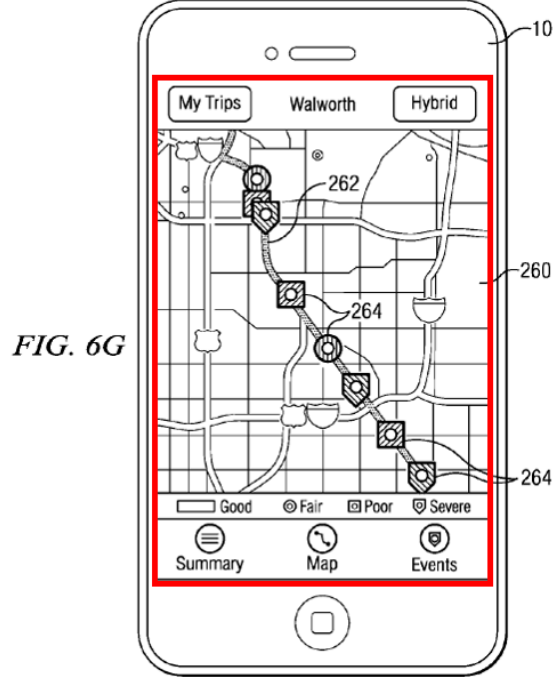


FIG. 6G

USAA-1005, Fig. 6C (annotated, left), Fig. 6G (annotated, right)

In the combination, it would have been obvious to include “[i]nput/output devices” having “**suitable interfaces** allowing **a user to interact** with [HMD], and in particular, with driving analysis application 50,” USAA-1005, [0031], [0163], [0019] (“iPhone”), [0023], [0059], FIG. 6G; USAA-1003, ¶¶162-163.

Peng-Chatterjee renders obvious a mobile device that uses a touchscreen and graphical user interfaces to interact with a driving application. USAA-1003, ¶¶161-164; USAA-1005, [0030]-[0031], [0034], [0039], [0062], [0066], [0070].

[1.4]

As shown below, Peng-Chatterjee renders obvious a HMD that includes one or more processors (“**processor**”) “to execute driving analysis application 50” and

“calculate, based at least on the collected driving data, one or more metrics related to the driver’s driving behavior.” USAA-1003, ¶¶165-166; USAA-1005, [0006], Figs. 2-3, Abstract, [0007]-[0008], [0025], [0028]-[0029], claims 1-14, 27.

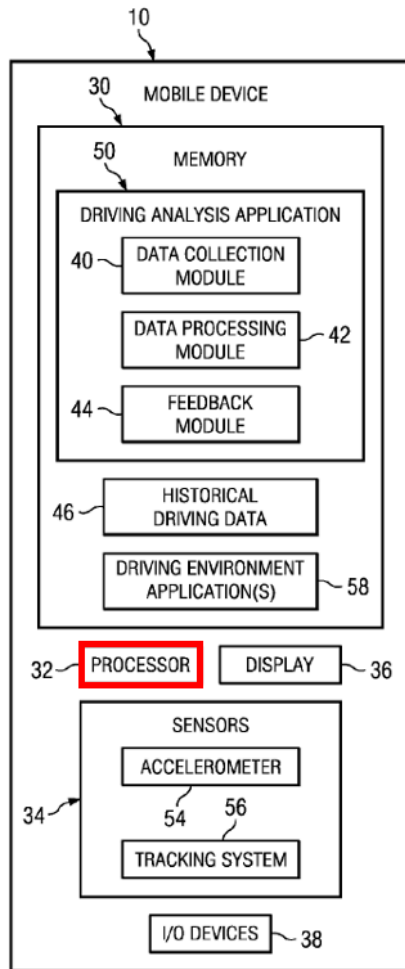


FIG. 2

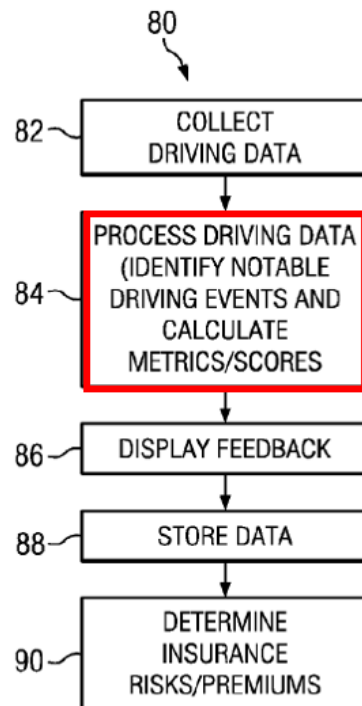


FIG. 3

USAA-1005, Figs. 2-3 (annotated)

[1.5]

Peng-Chatterjee renders obvious a HMD that includes memory 30 (“*memory*”) for storing computer readable instructions and data associated with its

driving analysis application 50. USAA-1003, ¶¶167-168; USAA-1005, [0025]-[0026], [0006]-[0008], Abstract, [0028]-[0029], [0032], [0058], [0071], [0073], [0142], Claims 1-13, Figs. 2-4. In the combination, the HMD would have been obviously configured to “manage short-term storage...[and]...long-term storage of certain data.” USAA-1005, [0058], [0042], [0073].

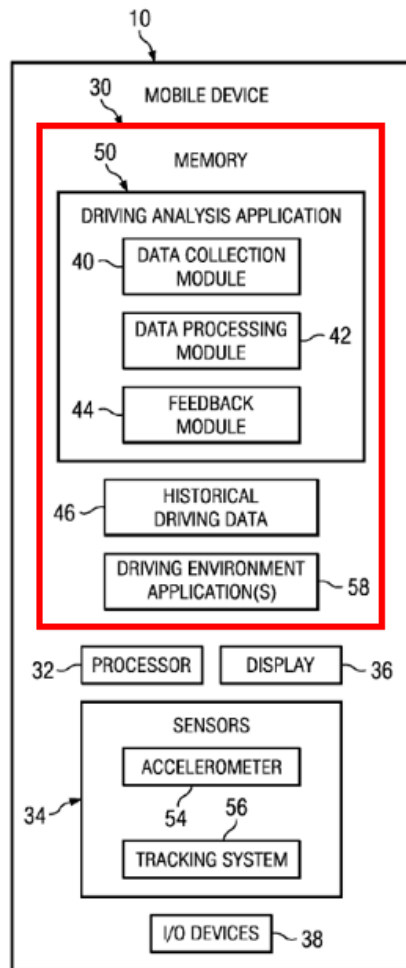


FIG. 2

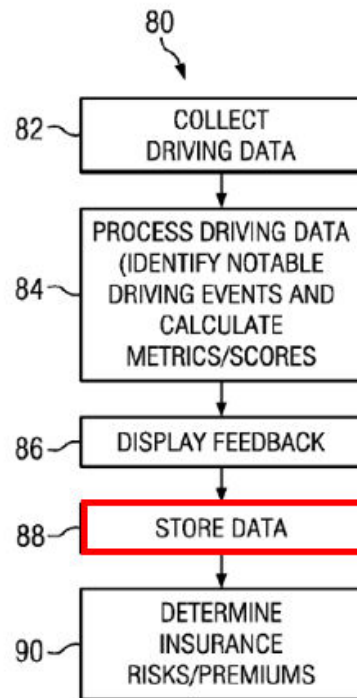


FIG. 3

USAA-1005, Figs. 2-3 (annotated)

[1.6]

As discussed (§III.A.1) and for reasons discussed below, Peng-Chatterjee

renders obvious this element. USAA-1003, ¶¶169-176. Based on Peng and Chatterjee, a POSITA would have found it obvious to configure the Peng-Chatterjee HMD to communicate with the dock and use at least on inputs received by the user interface and its sensors (e.g., accelerometer and GPS) to determine a start of a driving period based on dock status during vehicle usage. *Id.*

With respect to inputs received by the user interface, Peng teaches that when “starting...data recording (i.e., starting a data collection session), a screen or image for starting data recording may appear upon the HMD 10 being properly oriented.” USAA-1005, [0152]. Using this screen, user inputs are receivable in the form of “manual instruction” (“*at least one of the inputs received by the user interface*”), e.g., “a user pressing a ‘Start Recording’ button that is displayed” on HMD 10, can “start (or re-start) collection of driving data” (“*a start of a driving period*”).

USAA-1005, [0152], [0066], [0154]; USAA-1003, ¶¶170-173. A POSITA would have been motivated to use manual instruction in the combination device to start data recording for efficient recording, e.g., conserve battery life of Peng-Chatterjee’s device during data collection or confirm that proper orientation has been obtained. USAA-1003, ¶¶170-173. Additionally, it would have been obvious to a POSITA to have configured the combination to interact with and receive user input via a user interface to confirm a readiness to collect driving data when determining proper orientation to prevent the premature/unintended collection of driving data.

Id.; USAA-1005, [0037], [0030], [0076], Fig. 4.

Furthermore, with respect to determining a start of a driving period during vehicle usage from sensor data, a POSITA would have found it obvious, based on Peng's disclosure to further configure the Peng-Chatterjee device to "automatically start and/or stop collection of driving data in response to determining that the HMD is likely travelling in an automobile, e.g., **based on a real time analysis of data received from accelerometer 54, location tracking system 56, or other sensors 34** provided by [HMD]" ("*sensor data from the device's sensor set*"). USAA-1003, ¶172, 174-175; USAA-1005, [0035], [0077], [0029]. Additionally, a POSITA would have found it obvious based on Peng (§III.A.1) to configure the combination device to "determine the orientation of [HMD]" using sensor data to assess whether the mobile device is ready to start data recording ("*a start of a driving period*"). USAA-1005, [0153], [0034], [0021], [0037], [0151]; USAA-1006, [0092]; USAA-1003, ¶170,172.

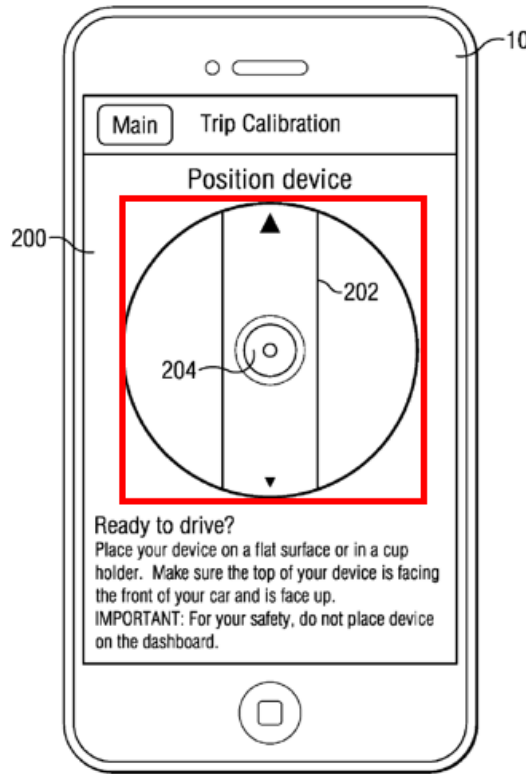


FIG. 6A

USAA-1005, Fig. 6A (annotated)

Thus, from these disclosures, a POSITA would have found it obvious to configure the Peng-Chatterjee's HMD to determine a start of a driving period, e.g., starting a data collection session on the device, during vehicle usage, based on at least the above-noted inputs received by the user interface and the above-noted sensor data from the HMD's sensor set. USAA-1003, ¶¶173-175; USAA-1005, [0035], [0077], [0029].

Furthermore, as discussed (§III.A.1.(c)), it would have been obvious to a POSITA to configure the combination device to determine the start of the driving

period during which the device was removably attached to the vehicle and the vehicle was being used based on Peng-Chatterjee's teachings. USAA-1003, ¶176. As discussed, the Peng-Chatterjee device can use its sensors (e.g., accelerometer and GPS) and communicate with the dock to ensure proper docking/orientation within a moving vehicle as a basis for resolving/determining a start of a driving period during vehicle usage. *Id.* Furthermore, Peng-Chatterjee would have rendered obvious a driving period during which the HMD is removably attached to the vehicle via a dock and the vehicle is moving (or otherwise in use) for multiple reasons, e.g., minimizing driving data collection interruptions and securely attaching the HMD within the vehicle in a safe and convenient manner. *Id.*

[1.7]

In the Peng-Chatterjee combination, the HMD would have been obviously configured to obtain "driving data...from sensors." USAA-1003, ¶¶177-180; USAA-1005, [0021]-[0022], [0029], [0069], [0039], Fig. 4. The Peng-Chatterjee HMD would have also been configured to "process any or all of this driving data" during the driving period ("***process the sensor data from the sensor set during the driving period***") to derive "any of the metrics, scores, or other data calculated or proceed [sic] by data processing module," where the "calculate[d] filtered or averaged driving behavior metrics" such as "acceleration, braking, cornering, etc.," are

associated with the “collected driving data” (“*derive driving information associated with how the vehicle is driven*”). USAA-1003, ¶¶159-160, 177; USAA-1005, [0021]-[0022], [0069]-[0071], FIG. 4, [0039], [0042], [0064], [0165].

As shown in Fig. 4, a POSITA would have found it obvious that Peng-Chat-terjee’s HMD “Process[es] Trip Data” by, “e.g., Filter[ing] Data and Calculat[ing] Metrics,” (“*derive driving information*”).USAA-1003, ¶¶178; USAA-1005, [0074], [0044], FIG. 4.

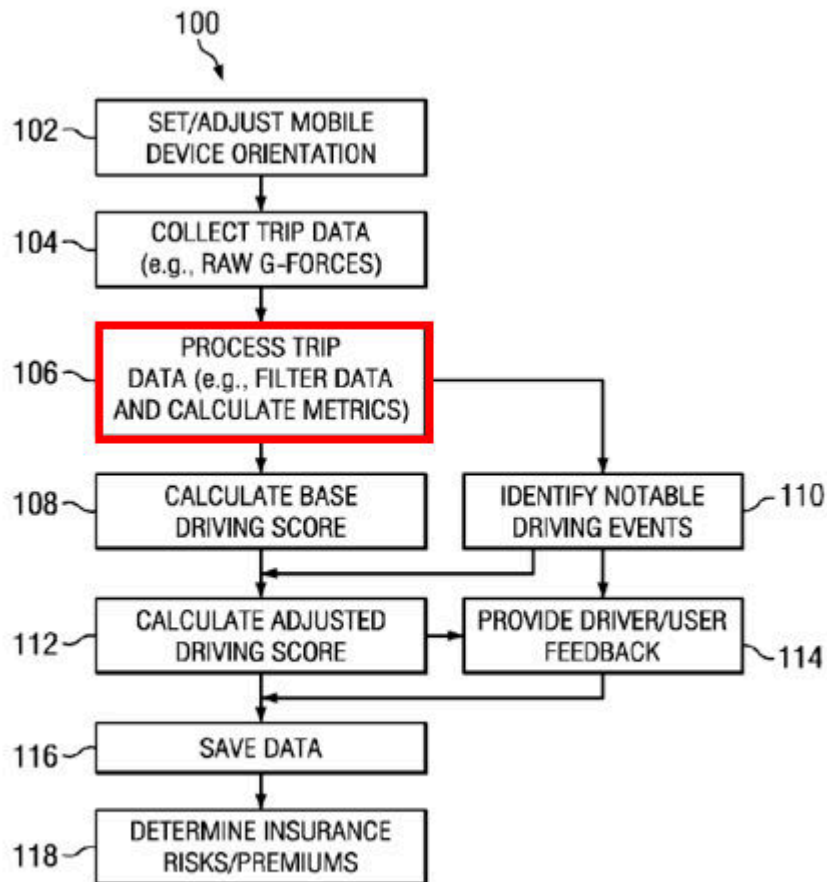


FIG. 4

USAA-1005, Fig. 4 (annotated)

From at least these descriptions, a POSITA would have found it obvious that Peng-Chatterjee's HMD processes sensor data from the sensor set during the determined driving period to derive the "calculated driving behavior metrics and/or scores" ("*driving information associated with how the vehicle is driven*").

USAA-1003, ¶¶179-180; USAA-1005, [0044], [0071], [0073].

[1.8]⁷

A POSITA would have found it obvious to configure the Peng-Chatterjee device to store a selection of the driving information (e.g., "data... for display" and "calculated driving behavior metrics") to the memory (e.g., "local volatile memory for display, in local non-volatile memory as historical driving data 46, and/or in remote memory as historical driving data 152"). USAA-1003, ¶¶181-184; USAA-1005, [0044], [0058], [0071].

Specifically, it would have been obvious to configure Peng-Chatterjee to "manage the **storage** of **any** of the data collected by data collection module 40 at step 104 (e.g., raw data or filtered raw data) **and/or any** of the metrics, scores, or

⁷ The "selection" of driving information is improper inferential claiming, and therefore non-limiting, since such selection is not one of the operations recited to be performed by the "mobile telecommunications device." *Ex Parte Sullivan*, Appeal No. 2002-1924 (PTAB June 20, 2016).

other data calculated or processed by data processing module 42,” in which the device “may manage short-term storage of certain data... and may further manage long-term storage of certain data....” USAA-1005, [0142], [0071], [0073], [0058]; USAA-1003, ¶182.

As shown in FIGS. 6C-6G, “various information collected or processed by application 50” such as “driving behavior metrics (Acceleration, Braking, and Cornering) and a driving score (‘224’) calculated by data processing module 42” (“*driving information*”) are displayed. USAA-1005, [0155]-[0164], FIGS. 6C-6G. A POSITA would have understood and/or found it obvious that at least a selection of such displayed driving information would be included in Peng’s data stored in a “local volatile memory for display.” *Id.*; USAA-1005, [0071], [0073]; USAA-1003, ¶183. Similarly, at least a selection of such displayed driving information would also be included in “local non-volatile memory as historical driving data 46, and/or in remote memory as historical driving data 152” because Peng discloses “the collected data may be processed, displayed, stored in second memory (e.g., stored in non-volatile memory as historical driving data 46), and/or communicated to remote entities for storage, processing, and/or display.” *Id.*

Thus, a POSITA would have understood that data stored in the device’s memory includes “a selection of the driving information.” USAA-1003, ¶¶181-184; USAA-1005, [0071], [0073].

[1.9]

See [1.7]. Peng-Chatterjee's HMD is configured to process sensor data from device's sensor set during a determined driving period to derive "driving behavior metrics and/or scores." USAA-1003, ¶¶167-180; USAA-1005, [0022], [0064], [0165].

Based on Peng's disclosure, Peng-Chatterjee would have also been obviously configured to "collect [driving behavior] data from sources, including **(a) data sources provided by [HMD]**...(b) data sources in vehicle 12 but external to [HMD]...**and/or** (c) data sources external to vehicle 12."⁸ *Id.*, [0033], [0034], [0029]; USAA-1003, ¶¶185-189. Particularly, "[d]ata collection module 40 may collect such data from **any number and types of data sources, including...data sources provided by [HMD] 10[.]**" USAA-1005, [0033], [0034].

For example, a POSITA would have found it obvious to configure Peng-

⁸ It is sufficient for the prior art to show that an element is optional to satisfy a negative limitation. *WAG Acquisition, LLC v. WebPower, Inc.*, No. 2018-1617 at 12 (Fed. Cir. 2019) ("While [prior art] does not specify that [an element] is not used, nothing in the record suggests that [the element] *must* be used.")(emphasis in original).

Chatterjee to use “real time analysis of data received from accelerometer 54, location tracking system 56, or other sensors 34 provided by [HMD]....” USAA-1005, [0035]; USAA-1003, ¶187. Specifically, the combination would be obviously configured to collect “the current acceleration of [HMD] from accelerometer 54,” “the current location of [HMD] from location tracking system 56 (e.g., whether [HMD] is located on/near a roadway),” and “the velocity of [HMD] from location tracking system 56.” USAA-1005, [0035], claims 27, 1, 5, 14, 18, Fig. 2. Furthermore, the combination would obviously be “operable to process or analyze any of the driving data...collected by [HMD] itself” and “based on such collected driving data, calculate one or more driving behavior metrics and/or scores.” *Id.*, [0044].

A POSITA would have found obvious, based on the above examples, that the combination derives driving information without data from the vehicle sensors, at least because some of those examples focus only on leveraging motion data obtained from one or more sensors provided by the mobile phone (e.g., sensors 34) to derive filtered data and/or driving behavior metrics (“*driving information*”).

USAA-1003, ¶¶188-189; USAA-1005, [0044], [0035].

Further, a POSITA would have understood there to be no need to use data from vehicle sensors to derive driving information, and would have found obvious that derivation of that driving information without data from the vehicle’s sensors

provides benefits in obtaining driving information. USAA-1003, ¶189; USAA-1005, [0044], [0035].

[1.10]

Based on Peng (*see* §III.A.1(a)), a POSITA would have found it obvious to configured Peng-Chatterjee's [HMD] to include "a driving analysis application," which is "**downloaded** via the Internet" ("*a downloaded application*") to control the HMD to "process...driving data collected by [HMD]...**to calculate one or more driving behavior metrics and/or scores....**" ("*generate a driving score*"). USAA-1003, ¶¶190--192; USAA-1005, [0020], [0022], [0074], [0143], [0145].

Indeed, Dr. Michalson explained it would have been readily understood by a POSITA that HMD 10 is controlled by driving analysis application 50 because Peng explains that the application is embodied in the software, firmware, and/or computer-readable instructions and controls the mobile device via multiple modules. USAA-1003, ¶191; USAA-1005, [0026], [0032], Fig. 2. For example, the application includes a "data processing module 42...operable to process or analyze any of the driving data..., **calculate one or more driving behavior metrics and/or scores.**" USAA-1005, [0032], [0044].

The "**driving behavior metric and/or score**" are "related to **the driver's** driving behavior" and provide "data for risk analysis of **a driver,**" and, thus, *associated with a particular driver*. USAA-1005, Abstract [0024], [0027], [0032],

[0044], [0074], Fig. 2; USAA-1003, ¶192.

3. Claims 21, 46, 51, 54

Peng-Chatterjee renders obvious these claims as explained above for the corresponding claim 1 limitations listed in the table below. USAA-1003, ¶193.

Claim 1 Limitation	Corresponding Limitations
[1.1] ⁹	[21.1], [46.1], [51.1], [54.1]
[1.2]	[21.3], [46.2], [51.3], [54.2]
[1.3]	[46.3], [54.3]
[1.4]	[21.4], [46.4], [51.4], [54.4]
[1.5]	[21.5], [46.5], [51.5], [54.5]
[1.6]	[21.6], [46.6], [51.6], [54.6] ¹⁰
[1.7]	[21.7], [46.7], [51.7], [54.7]
[1.8]	[21.8], [46.8], [51.8], [54.8]
[1.9]	[21.10], [46.9], [51.10], [54.9]
[1.10]	[21.9], [46.12], [51.9], [54.10]

⁹ See further discussion of limitations for [21.1]/[51.1]/[54.1], *infra*.

¹⁰ Claim element [54.6] differs from [1.6] by a single word, “affixed” recited in [54.6] compared to “attached” recited in [1.6]. The ’879 patent specification does not distinguish the two terms “affix” versus “attach.” USAA-1003, ¶¶200-202.

[21.1]/[51.1]/[54.1]

See [1.1], [1.4]. The combination renders obvious “***non-transitory computer readable medium having instructions comprising a software application stored thereon, wherein the instructions are configured to be executed on a processor of a mobile telecommunications device to...***” based on Peng’s disclosure of “[a] further aspect of the invention provides a **non-transitory computer readable medium containing a set of computer readable instructions executable by a processor** to receive driving data collected by one or more sensors associated with a [HMD]...” USAA-1005, [0008], claim 27 (“A non-transitory computer readable medium containing a set of computer readable instructions executable by a processor to...”). USAA-1003, ¶194.

[21.2a]/[51.2a]

See [1.3]. Peng-Chatterjee renders obvious this element because “[HMD] 10 may include ... a display” (“***display***”). USAA-1005, [0020], [0025], [0030], claim 1; USAA-1003, ¶195.

[21.2b]/[51.2b]

See [1.3], [21.2a]. Peng-Chatterjee renders obvious this element because Peng discloses **displaying** “displayable objects (e.g., screens, windows, menus, images etc.)” that “**facilitate[s] user navigation** among the various objects” (“***a user interface***”), e.g., on “**a touchscreen display 36,**” as “shown and discussed below

with reference to FIGS. 6A-6G.” USAA-1005, [0062], [0031]; [0163], [0019]

(“iPhone”), [0023], [0059], FIG. 6G; USAA-1003, ¶¶196-197.

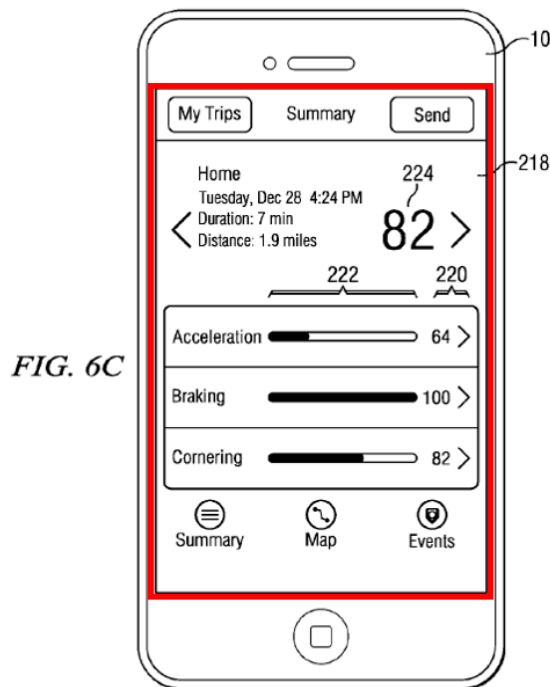


FIG. 6C

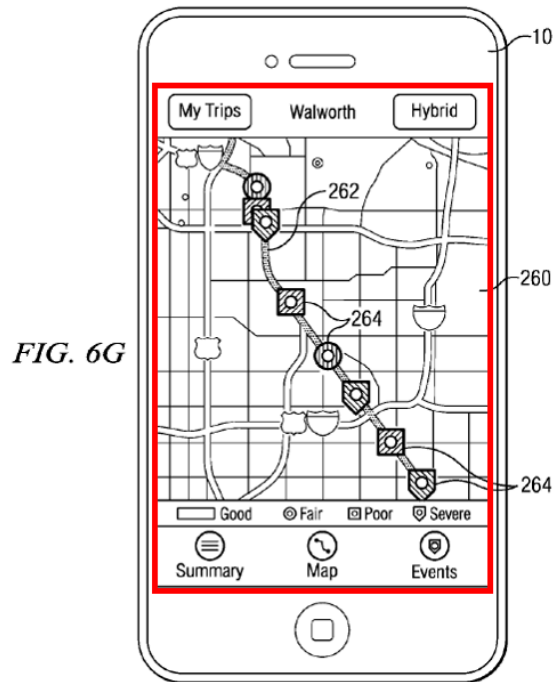


FIG. 6G

USAA-1005, Fig. 6C (annotated, left), Fig. 6G (annotated, right)

[46.10]

See §III.A.1, [1.7]. A POSITA would have found obvious that Peng-Chatterjee’s mobile device is configured to “**process any or all of this driving data** collected by [HMD]” “**to calculate one or more driving behavior** metrics and/or scores based on such collected driving data” such as “**acceleration, braking.**”

USAA-1005, [0022]. The mobile device includes a “driving analysis application

[that can] **identify “NDEs,” such as instances of notable acceleration, braking....**” (*“determination of at least one of: vehicle acceleration events and vehicle braking events”*). USAA-1005, [0022], [0044]; USAA-1003, ¶198.

[46.11]/[51.11]

The combination renders obvious this limitation based on Peng’s disclosure that “[d]ata processing module 42 may **identify [NDEs] using** any suitable **algorithms**. For example, **an algorithm may compare acceleration data** from accelerometer 54 (raw or filtered) **to one or more predefined thresholds for notable acceleration, braking....**” USAA-1005, [0053]. “[M]odule 42 may execute the following example algorithms to **identify the occurrence and type of a [(NDE)]**” by “compar[ing] the lateral and longitudinal G-force data to corresponding threshold values” and determining NDEs such as “NDE_type ‘A’=**Acceleration**” and “NDE_type ‘D’=**Deceleration**” when the **lateral G-force data** (“LatG”) “detected by the accelerometer” satisfies “corresponding threshold values” (*“determination of such events occurs when data from the sensor set accords with preset parameters”*). USAA-1005, [0099]-[0115]; USAA-1003, ¶199.

4. Claims 2, 3, 5, 8, 16-20, 41-43, 45

[2]

See [1.7], [1.10]. It would have been readily understood by a POSITA reading Peng-Chatterjee’s HMD is controlled by the driving analysis application 50 via

multiple modules (e.g., data collection modules 40, data processing 42, and feed-back module 44). USAA-1003, ¶¶203-205; USAA-1005, [0022], [0032], Fig. 2.

For example, the application 50, via the data collection module 40, can “**control the start and stop of driving data collection**” and, via the data processing module 42, “**identify [NDE]**” (“*detect occurrence of a predetermined event*”). USAA-1005, [0034], [0022], [0045]-[0053].

Furthermore, in response to identifying the NDEs, application 50 takes at least one predetermined action, such as: (1) determining the NDE severity, (2) storing (either locally and/or remotely), (3) displaying, and/or (4) reporting the NDEs to the driver and/or third parties” (“*in response take at least one predetermined action*”). USAA-1005, [0034], [0055], [0064], [0070], [0073]-[0074], [0142], [0163], Figs. 2-4. It would have been obvious to a POSITA that determining of the NDE severity and storing, displaying, and/or reporting of NDEs would need to occur in response to the detection of the NDE to “provide the driver real time feedback regarding [NDEs]” that distinguishes “different types of [NDEs].” USAA-1003, ¶¶204-205; USAA-1005, [0061], [0073], Fig. 4.

[3]

See §III.A.1, [1.5], [1.10], [2]. Peng discloses that “**collected data** may be **processed, displayed, [and] stored...in ... memory**” (“*storing driving information associated with that event to the memory*”). USAA-1005, [0073]; USAA-

1003, ¶¶206-208. Peng also describes processing collected data to provide driving information (e.g., “driving behavior metrics) and using the driving information (e.g., processed sensor data) to identify NDEs. USAA-1005, [0068]. The methods performed by the driving analysis application 50 in Peng-Chatterjee would have been obviously configured to identify NDEs (step 110) (“*occurrence of a pre-determined event*”) followed by predetermined actions, including “sav[ing] data” (step 116) (“*storing driving information associated with that event to the memory*”). USAA-1003, ¶¶206-207; USAA-1005, [0013], [0075], [0136], [0071], [0146], Figs. 2, 4.

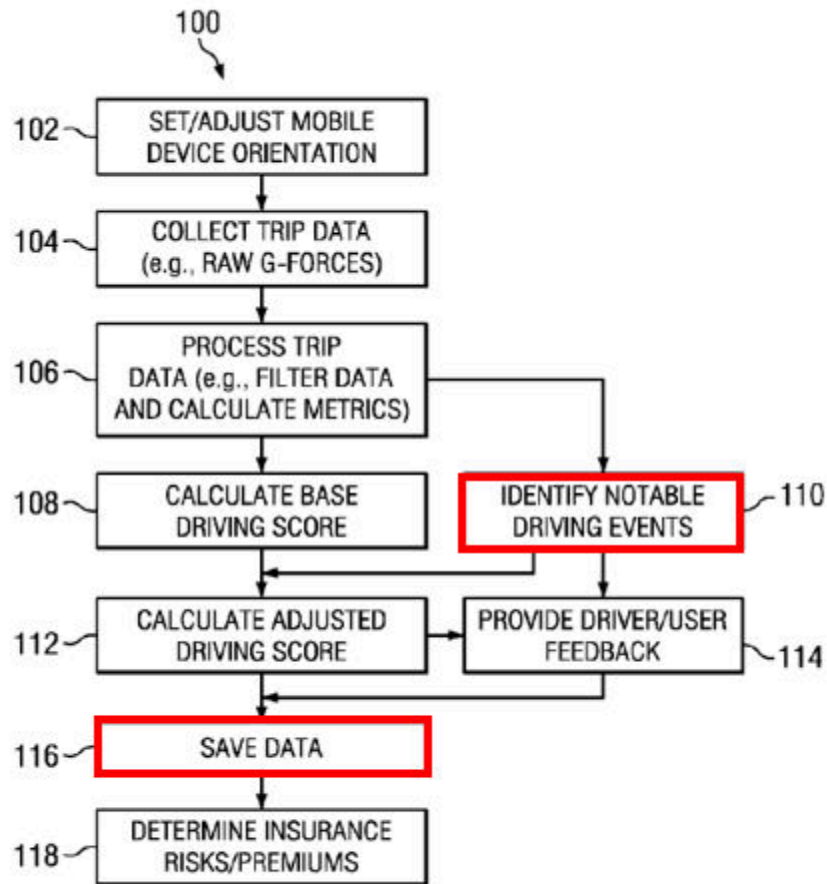


FIG. 4

USAA-1005, Fig. 4 (annotated)

From this and related description, a POSITA would have understood and/or found obvious that predetermined actions would have included storing and/or reporting the identified NDEs to memory of the Peng-Chatterjee device. USAA-1003, ¶208; USAA-1005, [0068], [0099], [0034], [0064], [0073]-[0074], [0142]; Figs. 2, 4. It would have been obvious to a POSITA that the storing of NDEs would need to occur in response to detecting the NDE in order to “provide the

driver real time feedback” and “display...the locations of [(NDEs)].” USAA-1003, ¶208; USAA-1005, [0061], [0163], [0073].

[5]

See [2]. It would have been obvious to configure Peng-Chatterjee’s device to identify NDE (“*an event has been detected*”) from the collected/processed sensor data (“*driving information*”) and, in response, store in memory and report the events to “remote entities” (“*predetermined action is transmitting driving information...to a remote system*”). USAA-1003, ¶209; USAA-1005, [0068], [0099], [0034], [0064], [0073]-[0074], [0142], [0061], [0163], Figs. 2, 4. Additionally, the Peng-Chatterjee device would have been obviously configured to “communicate **data associated with application 50** via a network or other communication link(s) to one or more **other** computer devices,” in which communication of data can be transmitted “via any one or more...**wireless** communication links” (“*transmitting driving information via a wireless telecommunication module of the mobile telecommunication device to a remote system*”). USAA-1003, ¶209; USAA-1005, [0057]-[0058], [0149], [0033], [0035], Fig. 5.

[8.1]

See [2], [5]. It would have been obvious to configure Peng-Chatterjee’s device to identify NDE (“*an event has been detected*”) from the collected/processed sensor data (“*driving information*”) and, in response, store in memory and report

the events to “remote entities” (“*predetermined action is transmitting driving information...to a remote system*”). USAA-1003, ¶210; USAA-1005, [0068], [0099], [0034], [0064], [0073]-[0074], [0142], [0061], [0163], Figs. 2, 4.

[8.2]

Peng describes that HMD 10 can identify [(NDEs)]” and “process the collected data” “in response to a request” (“*configured to receive from the remote system a request to transmit to*”) by remote entities, e.g., “a user of [HMD], a user at remote computer 150, or other user.” USAA-1005, [0068]. Furthermore, Peng’s HMD 10 may “communicate **some** or all data collected by data collection module 40” (“*selected portions of*”), including “**partially processed data**” (“*the driving information associated with the detected event*”), to “a remote processing computer 150” (“*remote system*”). USAA-1005, [0146]. Thus, it would have been obvious to a POSITA to configure Peng-Chatterjee’s device to receive a request from a remote system to process select portions of the driving information associated with a detected event. USAA-1003, ¶211.

[16]

See [2]. The combination renders obvious that, in response to identifying NDEs (step 110), the mobile device is configured to “display[] data on display device 36 on [HMD], providing visual, audible, or other sensory feedback to the driver via [HMD]” and “facilitate user interaction with application 50 (e.g., via a

touchscreen display 36 or other input devices 38) allowing the user to view any of the data discussed above, e.g., by user selection or navigation of displayed objects) (*“providing the user with options to control the mobile device to take further actions”*). USAA-1005, [0140], FIG. 4; USAA-1003, ¶212. For example, Peng’s “FIG. 6F illustrates an example screenshot of a screen 250 in which multiple trips can be compared,” which provides the user with options to take further actions such as selecting “the trips being compared.” USAA-1005, [0162]. FIG. 6G shows “display icons 264 indicating the locations of [NDEs]” and “the type and/or severity level of each NDE,” providing users with options to control the mobile device to take further actions such as “select[ing] a particular icon 264 to display ... additional details regarding the respective NDE.” USAA-1005, [0163]; USAA-1003, ¶212.

[17]

Peng discloses “devices external to [HMD] (e.g., speed sensors, blind spot information sensors, seat belt sensors, GPS device, etc.)” and “data sources in vehicle 12 but external to [HMD] (e.g., on-board vehicle computer, seat belt sensors, GPS system, etc.)” (*“external device”*). USAA-1005, [0021], [0033]. The HMD interfaces with the external device “via a hardwire connection, Bluetooth® or other wireless means....” USAA-1005, [0021], [0033]. These external devices provide

“driving behavior data and/or driving environment data” regarding the driving environment (“*external device having access to external driving information associated with a condition of the vehicle*”). USAA-1005, [0063], [0066], [0014], [0021], Fig. 5; USAA-1003, ¶¶213-215.

A POSITA would have found it obvious that Peng-Chatterjee’s device can “collect driving data” that “include driving behavior data and/or driving environment data collected by external devices and communicated to [HMD].” USAA-1005, [0066], [0021] (“[HMD] may **collect** certain driving data” (“*to receive at least a portion of the external driving information*”) from **sensors and/or devices external** to [HMD] 10 (e.g., **speed sensors...**[and] GPS device, etc.)” (“*from the external device*”). USAA-1005, [0014], [0021], Fig. 5; USAA-1003, ¶¶216-218.

[18]

Peng-Chatterjee renders obvious [18] because Peng discloses the mobile device interfaces with the external device wirelessly, e.g., “Bluetooth® or other wireless means.” USAA-1005, [0033]; USAA-1003, ¶219.

[19]

A POSITA would have understood and/or found obvious that Peng-Chatterjee’s mobile device includes its own device battery given Peng’s non-limiting disclosure of HMD encompassing “any type of portable or mobile electronics device, such as for example a mobile telephone....” USAA-1005, [0019]; USAA-1003,

¶220. Furthermore, since [HMD] may be a smart phone, such as an iPhone, a POSITA would have understood that HMD has its own battery as a power supply. *Id.*; USAA-1500, [0002].

[20]

A POSITA would have found obvious that Peng-Chatterjee’s HMD “may be a **smart phone**.” USAA-1005, [0019], Figs. 1, 5, 6A-6E; USAA-1003, ¶221.

[41]

See [46.10]. USAA-1003, ¶222.

[42.1]

The term “swerving” appears once in the ’879 Specification and is determined based on “lateral G-forces.” USAA-1001, 21:41-42; USAA-1003, ¶223.

See §III.A.1, [1.7], [41]. A POSITA would have found obvious that Peng-Chatterjee’s mobile device is configured to “**process any or all of this driving data** collected by [HMD]” “to calculate “**cornering** metrics based on driving behavior data” and identify NDEs such as instances of **notable cornering** (“*determination of vehicle swerving events*”). USAA-1005, [0022], [0044]; USAA-1003, ¶¶224.

[42.2]

A POSITA would have understood, based on Peng’s similar disclosure to the ’879 Specification, that in the combination, determining NDEs such as “Left Cornering” and “Right Cornering” occurs when the **lateral G-force data** (“LatG”)

“detected by the accelerometer” satisfies “corresponding threshold values” (“*determination of such events occurs when data from the sensor set accords with pre-set parameters*”). USAA-1005, [0099]-[0115]; USAA-1003, ¶225.

[43]

See §III.A.1, [1.7], [41]. APOSITA would have found obvious that Peng-Chatterjee’s mobile device is configured to “**process any or all of this driving data** collected by [HMD]” “to calculate one or more driving behavior metrics and/or scores based on such collected driving data” such as “**acceleration, braking, and** cornering metrics” (“*both vehicle acceleration events and vehicle braking events*”) USAA-1005, [0022]; USAA-1003, ¶226-227. The mobile device includes a “driving analysis application [that can] identify [NDEs],” **such as** instances of **notable acceleration, braking, and/or** cornering.” *Id.*; USAA-1005, [0044].

[45.1]

A POSITA would have found obvious that Peng-Chatterjee’s mobile device “include[s] **proximity sensors**.” USAA-1005, [0029]; USAA-1003, ¶228.

[45.2]

Peng-Chatterjee’s mobile device “**include[s] algorithms for determining whether [HMD] is likely travelling in an automobile based on data from** accelerometer 54 and/or **location** tracking system 56, e.g., by analyzing ... **any other suitable data**.” USAA-1005, [0035]. Given the HMD is already equipped with

“**proximity sensors**,” it would have been obvious to a POSITA that the mobile device would include “algorithms” “for determining whether [HMD] is likely traveling in an automobile based on data from” the proximity sensors by analyzing whether the [HMD] is near the vehicle. USAA-1005, [0029], [0035]; USAA-1003, ¶¶229.

Additionally, based on Peng’s reference to “Bluetooth®,” and the HMD being “an iPhone,” a POSITA would have understood that the HMD would include a Bluetooth sensor, which is a proximity sensor capable of proximity detection based on Bluetooth signal strengths. USAA-1005, [0034], [0019]; USAA-1003, ¶230 (citing USAA-1009, Abstract, 14:25-15:3). A POSITA would have found it obvious that the combination device would have included the Bluetooth sensor and corresponding instructions that enable the mobile device to use the Bluetooth sensor to detect a proximity of the mobile device to the vehicle so as to communicate with data source in the vehicle via Bluetooth®, as described in Peng. USAA-1005, [0034]; USAA-1003, ¶230.

5. Claims 22, 23, 25, 28, 34, 37-40, 44, 47-50, 52, 53

Peng-Chatterjee renders these claims obvious as explained above for the corresponding claims listed in the table below. USAA-1003, ¶231.

Claim Limitation	Corresponding Limitations
[2]	[22]

Claim Limitation	Corresponding Limitations
[3]	[23]
[5]	[25]
[8.1]-[8.2]	[28.1]-[28.2]
[16]	[34]
[17]	[37]
[18]	[38]
[19]	[39]
[20]	[40]
[42.1]-[42.2]	[47.1]-[47.2], [52.1]-[52.2]
[43]	[48]
[42.1]-[42.2] & [43]	[44.1]-[44.2], [49.1]-[49.2],
[45.1]-[45.2]	[50.1]-[50.2], [53.1]-[53.2]

B. [GROUND 1B] – Peng, Chatterjee, and Tamir Render Claims 4 and 24 Obvious

1. Analysis

a) Tamir

Tamir describes a traffic information system that evaluates driver behavior in a vehicle. USAA-1012, Abstract. Tamir discloses data collection techniques that use “a dynamically adjusted rate” based on “the time of day, date, and/or external conditions” and “the driving behavior of the vehicle.” *Id.*, 9:10-20, 20:52-21:11; USAA-1003, ¶110.

b) Peng-Chatterjee-Tamir Combination

Dynamic sampling rates were known to provide several advantages to data

processing in vehicle monitoring systems, e.g., maintaining measurement precision, high adaptation to different driving conditions, and increased responsiveness. USAA-1003, ¶¶232-233 (citing USAA-1017, 5:61-6:9, 9:3-7; USAA-1018, [0019]; USAA-1019, 5:1-3). Thus, a POSITA implementing Peng's data collection and processing method would have looked to well-known temporal sampling techniques applicable for data similar to those being collected by Peng's device 10. USAA-1003, ¶232; USAA-1005, [0042], [0077].

As discussed above, Tamir's sampling rate can be adjusted based on conditions associated with data collection (e.g., driving behavior). USAA-1012, 9:10-20, 20:52-21:11. A POSITA would have implemented Tamir's data collection techniques to provide "lower power consumption and less wear and tear." USAA-1003, ¶233; USAA-1012, 20:52-21:2.

2. Claims 4, 24

[4]/[24]

See §III.A.1, [2], [3]. The combination renders obvious that the predetermined action is storing driving information associated with an NDE event. USAA-1003, ¶234; USAA-1005, [0061], [0163], [0073]. As also discussed (§III.B.1), a POSITA would have configured the combination to use Tamir's data collection techniques to improve Peng's motion recording process by using variable sampling rates. USAA-1012, 9:10-20, 20:52-21:11; USAA-1003, ¶234. For example,

Tamir’s “sampling rate is adjusted according to the driving pattern of vehicle 15.”

“[W]hen...the driver is driving relatively daringly” or “when an accident is possible,” “a higher sampling rate is used.” *Id.*, 20:52-21:2. A POSITA would have therefore found it obvious that when the combination device detects a NDE, a higher sampling rate is used (“*driving information captured at a higher sampling rate than when an event is not detected*”). USAA-1003, ¶234. The benefits of the combination includes preserving more information related to an event of interest (e.g., NDEs) to derive better metrics/scores to reflect the event, and increasing efficient use of storage resources. USAA-1003, ¶235 (citing USAA-1024, [0016], [0027], [0057]-[0058]); USAA-1005, [0071].

C. [GROUND 1C] – Peng, Chatterjee, and Katayama Renders Claims 6, 9, 10, 14, 15, 26, 32, 33, 35, 36 Obvious

1. Analysis

a) Katayama

Katayama relates to “a vehicle-mounted driving recorder” “that records driving behavior, including sensor data indicating the “surrounding situation or the like of a motor vehicle during a certain period before and after a time of an accident or...risk incident” in which “a driver...is close to [being] involved in an accident....” USAA-1024, Abstract, [0001]-[0002]; USAA-1003, ¶¶111-121.

Fig.1 shows the driving recorder 1 mounted on a vehicle.

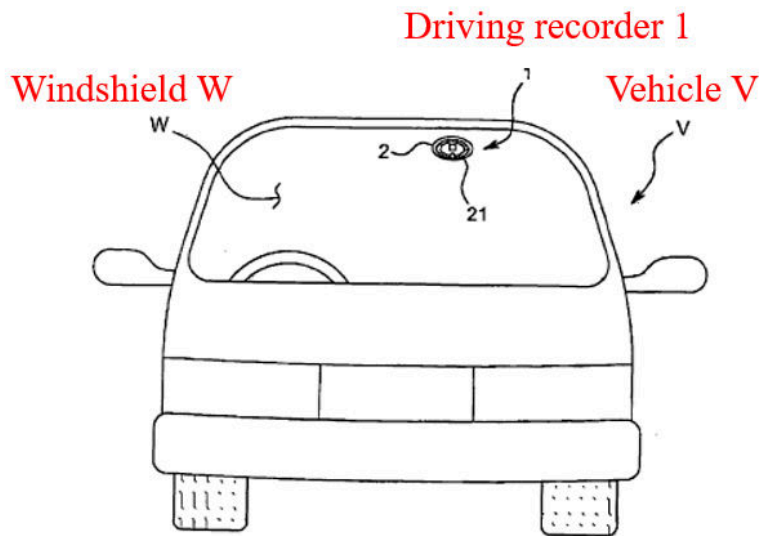
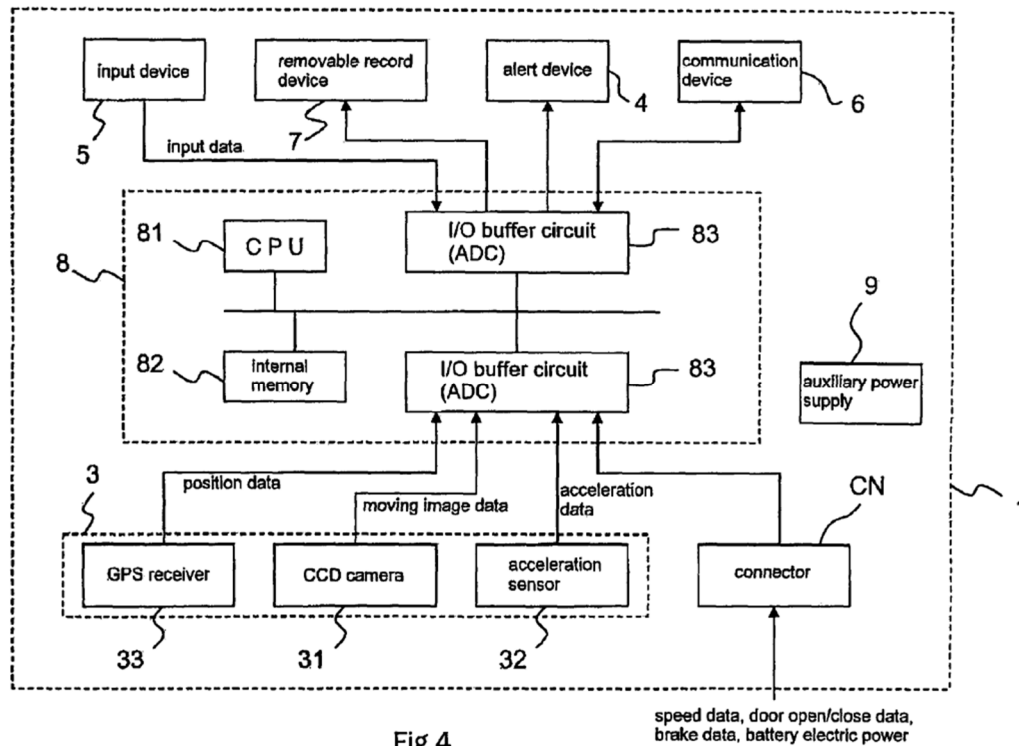


Fig.1

USAA-1024, Fig. 1

Recorder 1 detects occurrence of accidents and/or risk incidents based on “situation data,” which includes sensor data (e.g., “acceleration data” USAA-1024, [0013], [0019], [0021], [0034], Fig. 4. Actions can also be taken in response to the detected risk incident or accident. *Id.*, [0046], [0050], [0063]; USAA-1003, ¶112.

In Fig. 4, recorder 1 includes internal sensors “CCD camera 31,” “acceleration sensor 32,” and “GPS receiver 33,” and an “internal memory 82” configured to store data received from these and other sensors, and programs executed by “CPU 81.” USAA-1024, [0021], [0034], [0044]; USAA-1003, ¶¶113-115.



USAA-1024, Fig. 4

Fig. 5 is a “functional block diagram” of the “information processing device” of Fig.4. USAA-1024, [0028], [0044]-[0046]; USAA-1003, ¶116. Data receiving section 801 receives “situation data” including sensor data “at a constant sampling time one after another in a chronological order and writes the situation data” in TDSS 802, set in another “predetermined area of the internal memory 82.” USAA-1024, [0028], [0044]-[0045]. Due to that area’s limited capacity, “old data is sequentially erased” and replaced with “new situation data.” USAA-1024, [0045]; USAA-1003, ¶¶116-121.

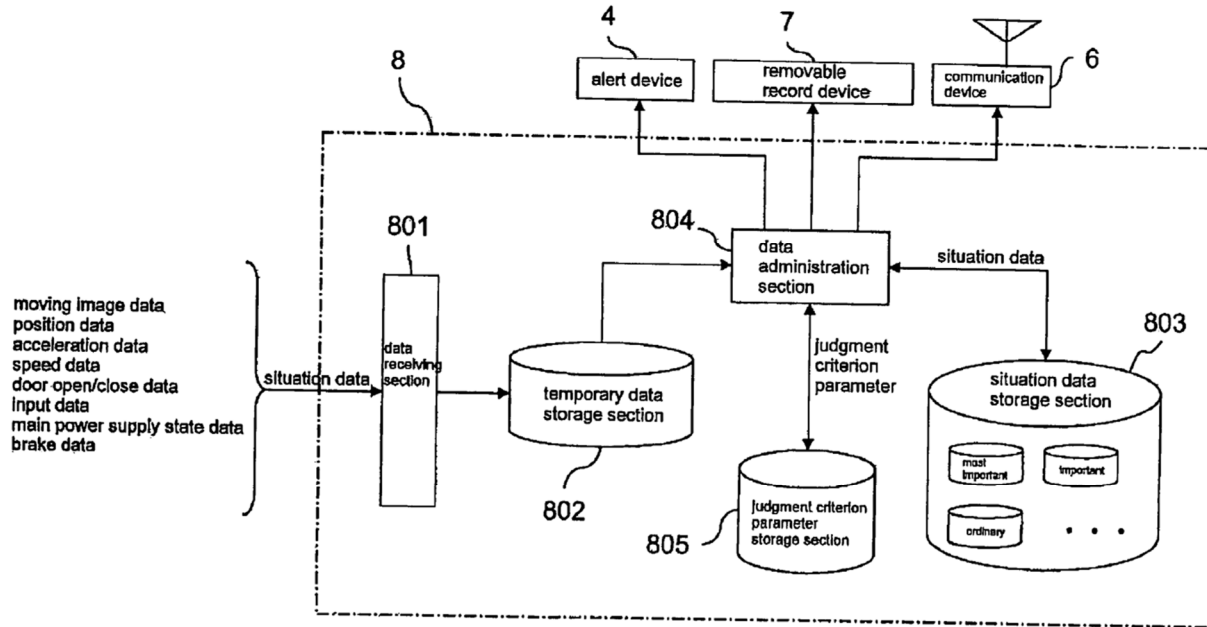


Fig.5

USAA-1024, Fig. 5

To avoid erasure of useful situation data, situation data from TDSS 802 may be transferred to SDRS 803 if the temporarily stored situation data meets one or more predetermined criteria for long-term recording, e.g., “whether or not the acceleration (deceleration) exceeds a predetermined” threshold. USAA-1024, [0001]-[0002], [0044]-[0051], [0063]; USAA-1003, ¶¶119-121.

b) Peng-Chatterjee-Katayama Combination

a. Accident Detection/Verification

Based on Peng’s disclosure (§III.A.1(a)), it would have been obvious to configure Peng-Chatterjee’s HMD to identify NDEs. USAA-1003, ¶236. Such identification of NDEs can be useful in various applications, e.g., insurance quotes.

USAA-1005, [0004], [0074], [0165]; USAA-1003, ¶236. A POSITA would have understood that accidents are commonly associated with NDEs (e.g., notable acceleration) and that the accident occurrence information would be highly relevant to predicting accident rates because “drivers with high accident...rates will be more likely to be involved in future accidents.” USAA-1005, [0022], [0024]; USAA-1003, ¶236 (citing USAA-1515, 29). Hence, a POSITA would have naturally sought to supplement Peng-Chatterjee’s capabilities using known accident detection/verification techniques to advance Peng’s motivations to provide pertinent driving information. USAA-1005, [0024], [0074], [0143], [0165]; USAA-1003, ¶236 (citing USAA-1008).

Dr. Michalson explains, “[s]everal vehicle monitoring systems by the Critical Date were similarly capable of detecting accidents.” USAA-1003, ¶237; USAA-1007, Abstract, 1:40-42, Fig. 3; USAA-1509; USAA-1510; USAA-1511; USAA-1512. For example, Katayama describes using a “vehicle-mounted driving recorder” to detect an event, e.g., accident, risk incidents, based on sensor data. USAA-1024, Abstract, [0012]. Like Peng, Katayama detects driving risk incidents, but further includes the detection/verification of accidents in its detection methods. USAA-1024, [0002], [0004], [0013], [0020], [0035]-[0038]. Also like Peng, Katayama uses its recorder’s sensor data, e.g., acceleration data, to detect accidents, e.g., by detecting “acceleration...exceed[ing] a predetermined criterion.”

USAA-1024, [0013], [0035]-[0037], [0040], [0048]-[0049]. Once detected, Katayama teaches alerting and enabling the driver to verify, via user-inputted data, whether the accident actually occurred. USAA-1024, [0050], [0007], [0012]-[0013].

A POSITA would have been motivated to include accident detection/verification, as taught by Katayama, in Peng-Chatterjee combination to supplement NDE detection with accident detection because accident occurrences are relevant to vehicle driving and to promote accurate collection of vehicle driving information. USAA-1005, [0002]-[0004]; USAA-1024, Abstract, [0050], [0007], [0012]-[0013]; USAA-1003, ¶¶238-239. Based on the structural and functional similarities between Katayama's recorder and Peng's HMD, it would have been obvious to a POSITA to have implemented these enhanced functionalities of Katayama's recorder in the combination device. USAA-1024, Figs. 3-4; USAA-1005, [0001], [0165]; USAA-1003, ¶¶238-239.

A POSITA would have had a reasonable expectation of success because the proposed combination merely involved implementing known techniques (e.g., Katayama's accident detection/verification based on driving data) into a known system (Peng's system). USAA-1003, ¶240. Furthermore, elements of the resulting combination would each generally perform functions they had been known to perform prior to the combination. USAA-1003, ¶240; USAA-1005, [0006],

[0029], [0033]; USAA-1024, [0040], [0048]-[0050].

a. *Data Storage Management*

Peng's HMD's memory 30 (§III.A.I(a)) includes short-term storage and long-term storage of certain data. USAA-1005, [0026], [0058], [0073]. Because Peng's HMD "filter[s] or truncate[s]" its short-term data by, e.g., "eras[ing] data collected" data depending on the length of the data collection session, a POSITA would have recognized that Peng's time-based data erasure techniques carries the risk of erasing important data. USAA-1005, [0077], [0058], [0073], Fig. 4; USAA-1003, ¶¶241-243 (citing USAA-1024, [0004], [0085]; USAA-1039, [0002]-[0006]). Furthermore, the advantages of identifying/storing driving information based on its relative importance were well recognized by the prior art (e.g., Katayama and Kim) before the Critical Date. *Id.* Hence, a POSITA would have found it obvious to supplement the combination's capabilities with known data storing techniques to address the combination's limited storage capacity while advantageously ensuring the storage of important data. USAA-1003, ¶¶241-243 (citing USAA-1513; USAA-1514; USAA-1024, [0004]-[0009]; USAA-1039, [0006]).

Based on teachings of Katayama, it would have been obvious to a POSITA to configure the memory of the combination device to include: (1) short-term memory configured to store raw and processed data (e.g., "time-stamped data," "filtered data," "metrics," "scores") irrespective of its contents for display for

short-term storage and (2) long-term memory to store at least select processed data (e.g., data indicating NDEs) based on its higher importance for long-term storage as “historical driving data.” USAA-1005, [0026], [0058], [0073]; USAA-1024, [0016], [0051], [0044], [0046], [0057]; USAA-1003, ¶244. By doing so, the combination leverages Katayama’s teaching of using its TDSS 802 for data storage irrespective of its contents and its SDRS 803 to store “data whose importance is higher,” such as data indicating NDEs of “severe” or “extreme” levels. *Id.* Indeed, a POSITA would have been motivated to configure the combination’s memory to generally apply data storage techniques to “eliminat[e] accumulation of useless data” and “enable[] effective use of the memory without erasing important situation data” by ensuring storage of potentially important data (e.g., data indicating NDEs) in the combination’s long term memory, e.g., “as historical driving data.” *See e.g.*, USAA-1005, [0026], [0058], [0071]-[0073], [0126]-[0133]; USAA-1024, [0016], [0053], [0044], [0046]; USAA-1003, ¶244.

A POSITA would have found the proposed combination obvious because of structural and functional similarities between Katayama’s recorder and Peng’s HMD, and would have therefore had a reasonable expectation of success due to the similarities and because memory allocation configurations were employed and well-known in dynamic monitoring systems by the Critical Date. USAA-1024, Figs. 3-4; USAA-1005, [0001], [0165]; USAA-1003, ¶245 (citing USAA-1042, 1).

Furthermore, the elements of the resulting combination would each generally perform functions they performed prior to the combination—the device in the combination would, as described in Peng, store its driving information data (e.g., data for displaying) in short-term memory, but further leverage Katayama’s technique of identifying and storing select data based on its relative importance when storing certain data in long-term memory, e.g., based on Peng’s NDE identification/classification. USAA-1003, ¶245; USAA-1005, [0058]; USAA-1024, [0015]-[0016], [0027].

2. Claims 6, 9, 10, 14, 15

[6.1]

The Peng-Chatterjee-Katayama device renders obvious to identifying NDEs (“*detect occurrence of a predetermined event*”). USAA-1005, [0022]; USAA-1003, ¶246. Upon detecting the NDE, the Peng-Chatterjee-Katayama device would be obviously configured, based on Peng and Katayama’s disclosures, to “provide the driver real time feedback regarding NDEs, via any suitable form of feedback,” e.g., “audible feedback...or visual feedback via display 36” (“*providing feedback to a use to indicate that an event has occurred*”). USAA-1005, [0061], [0001], [0057], [0059]; USAA-1024, [0050]; USAA-1003, ¶246.

[6.2]

Katayama teaches providing feedback to the driver when an accident has been detected and prompts the driver to verify the detected accident by providing

input data on the recorder. USAA-1024, [0050]; USAA-1003, ¶247.

See §III.C.1(b)). It would have been obvious to a POSITA to supplement Peng's detecting NDEs, to further detect an accident, and, upon detecting the accident, apply Katayama's technique of verifying the accident by prompting driver input to accurately process and communicate data. USAA-1024, [0050]; USAA-1003, ¶248. A POSITA would have understood and/or found it obvious to configure the combination's input/output devices 38 ("a touchscreen display 36, keys, **buttons**") to allow a user to verify an accident based on Katayama's teaching of using "button switch 5" as an input device for receiving input data to verify the event/accident. USAA-1005, [0062], [0063]; USAA-1024, [0041], [0050]; USAA-1003, ¶248. Thus, a POSITA would have configured the Peng-Chatterjee-Katayama device to receive a user's **input data** via input/output devices to **verify** whether the accident actually occurred after receiving feedback from the device. USAA-1003, ¶248.

[9.1]

Based on Peng, the combination renders obvious using a memory (e.g., memory 30) ("**the memory**") comprising different types of memory, such as one for "**short-term storage** of certain data," e.g., data "[stored] in local volatile memory for display," ("**a short term memory for transiently storing driving information**") and one for "**long-term storage** of certain data" ("**a long term memory**

for persistently storing driving information”). USAA-1005, [0026], [0058], [0071]-[0073], [0142], Figs.6C-6G; USAA-1003, ¶¶249-259. Specifically, the combination would leverage Peng’s disclosure of storing *driving information* such as “time stamped” data, “filtered data” and “any of the metrics, scores, or other data calculated or proceed [sic] by data processing module 42.” USAA-1005, [0042], [0058], [0069]-[0071]. A POSITA would have understood that Peng’s disclosed example memory used for “long-term storage” constitutes a long-term memory for persistently storing driving information while Peng’s disclosed example memory used for “short-term storage” constitutes a short-term memory for transiently storing driving information. USAA-1003, ¶¶249-259 (citing USAA-1037, [0042]-[0043]; USAA-1038, [0043], [0046]; USAA-1027, 63-65).

Consistent with Peng, Katayama’s techniques also uses different types or areas of memory for “temporarily stor[ing]” digitalized data in one memory location, e.g., a TDSS 802 (“*short term memory for transiently storing driving information*”) and for long term storage of data in another memory location, e.g., SDRS 803 (“*a long term memory for persistently storing driving information*”). USAA-1003, ¶¶249-259 (citing USAA-1027, 63-65; USAA-1037, [0042]-[0043]; USAA-1038, [0043], [0046]); USAA-1024, [0044]-[0046], [0051], [0053], Fig. 5).

[9.2]¹¹

See §III.C.1(b). A POSITA would have been motivated to leverage the teachings of Katayama in *Peng-Chatterjee*, which renders obvious [9.2]. USAA-1003, ¶260; USAA-1005, [0026], [0058], [0142]; USAA-1024, [0044]-[0046], [0053]. It would have been obvious to configure the combination's short term memory to receive driving information frequently or steadily since Peng teaches using "short-term storage of certain data," e.g., data "displayed in real time," and to "perform continuously" steps, e.g., collecting and storing data, to enable the HMD to provide the "real time feedback." USAA-1005, [0071]-[0073], Fig. 3; USAA-1003, ¶260.

Furthermore, it would have been obvious to configure the combination's short-term memory to "continuously" receive driving information in a manner that is more frequently or steadily ("*at a higher update rate*") than its long term memory because the combination would only occasionally store data that meets a

¹¹ A POSITA would have understood the "update rate" refers to a rate/frequency of the memory receives information/data as the '879 specification consistently uses "update rate" to describe the memory's operations of "receiv[ing]," "writ[ing]," and "record[ing]" information/data. USAA-1001, 7:57-65, 8:3-5; USAA-1003, ¶261.

predetermined condition (e.g., data indicating NDEs) to the long term memory, based on Katayama's teaching. USAA-1003, ¶¶261-264. Katayama teaches that its short-term memory, e.g., TDSS 802, receives data more frequently than its long-term memory, e.g., SDRS 803, because TDSS 802 "temporarily stores the situation data irrespective of the contents of the situation data" while data is occasionally transferred to its long-term memory, e.g., SDRS 803, because the data is transferred "[o]nly in a case that the content meets the predetermined condition." *Id.*, [0045]-[0046], [0051]. Thus, a POSITA would have understood and/or found it obvious that Katayama's TDSS 802 ("*short term memory*") obtains situation data more frequently ("*receives...at a higher update rate*") than SDRS 803 ("*a long term memory*") given Katayama's disclosure that "[TDSS] 802 temporarily stores the situation data irrespective of the contents of the situation data **while** the [SDRS] 803 stores the situation data for the record **basically without updating** the situation data," i.e., **at a lower update rate**. USAA-1024, [0044]-[0046], [0051], Fig. 5; USAA-1003, ¶¶261-264.

[9.3]

See §III.C.1. It would have been obvious to configure the combination device to record driving information to its short term memory ("*write driving information to the short term memory*") at a constant sampling rate ("*at a predetermined update rate during the driving period*") and in a chronological order ("*in a*

predetermined sequence”). USAA-1003, ¶¶265-266; USAA-1024, [0044]-[0046], [0001], [0016], Fig. 5. As discussed ([9.2]), the combination leverages Peng’s method of “perform[ing] continuously” steps, e.g., data collection, to enable the HMD to provide “real time feedback.” USAA-1005, [0072]-[0073], Fig. 3.

Furthermore, the combination would further leverage Katayama’s disclosure of “receiv[ing] the situation data...at a constant sampling time one after another in a chronological order and writes the received situation data one after another in the [TDSS] 802.” *Id.* A POSITA would have understood that Katayama teaches recording the data during the driving period because the recorded data is recorded “during a certain period before and after a time of an accident or a hiyari hatto (risk incident).” USAA-1003, ¶266; USAA-1024, [0001], [0016].

[9.4]

See §III.C.1(b). It would have been obvious to configure the combination to overwrite previously collected driving information stored in its short term memory with new driving information data sequentially (“*in accordance with the predetermined sequence*”). USAA-1003, ¶¶267-268; USAA-1024, [0044]-[0046], Fig. 5. Specifically, the combination would leverage Katayama’s teaching that “[i]f a capacity of the [TDSS] 802 runs out, old data is sequentially erased and new situation data is written in the [TDSS] 802.” USAA-1024, [0045]. A POSITA would have understood that, by being “**sequentially** erased,” the old data is erased according to

the chronological order that it is written into the short term memory, e.g., TDSS 802, which is First in, First Out (FIFO), a typical replacement policy commonly used to overwrite old data in a memory when the memory is full. USAA-1003, ¶267-268 (citing USAA-1027, 70-71; USAA-1039, [0003]-[0004]).

[10.1]

See [2]. Peng-Chatterjee-Katayama device is controlled by application 50 to control the device to detect NDEs (“***detect an occurrence of a predetermined event***”), such as “notable acceleration” and “the severity of such events” based on “compar[ing] acceleration data...to one or more predefined thresholds.” USAA-1005, [0022], [0053], [0055]; USAA-1003, ¶269.

Katayama discloses detecting “an accident occurs,” e.g., based on determining “the predetermined condition is satisfied” when “both the acceleration data exceeds the predetermined judgment criterion and the acceleration data continues over a certain period.” USAA-1024, [0046]-[0051]. Accidents can be “a crash accident or the like.” USAA-1024, [0039], [0075].

See §III.C.1(b). Peng-Chatterjee-Katayama renders obvious detecting accident-type NDEs according to Katayama’s techniques (“***detect the occurrence of a predetermined event***”) based on, e.g., the acceleration data. USAA-1005, [0022], [0053], [0055]; USAA-1024, [0046]-[0051]; USAA-1003, ¶¶269-271.

[10.2]

Katayama describes transferring situation data from TDSS 802 (“*short term memory*”) to SDRS 803 (“*long term memory*”) in response to satisfaction of predetermined conditions associated with accident detection. USAA-1024, [0046]. The conditions can relate to acceleration data, such as “whether or not the acceleration...exceeds a predetermined judgement criterion,” or “continues for more than or equal to a certain period...” *Id.*, [0048]. A POSITA would have therefore understood that where an accident is detected based on acceleration data that also satisfies a predetermined condition for transfer, in *Peng-Chatterjee-Katayama*, the device is configured to transfer the data from TDSS 802 to SDRS 803 “*in response to*” the accident being detected. USAA-1003, ¶¶272-273.

[14.1]

See [2]. Katayama specifies the accident can be “a **crash** accident,” Peng-Chatterjee-Katayama thus renders obvious [14.1]. USAA-1024, [0039], [0075]; *see also* USAA-1008, 30¹²; USAA-1003, ¶274.

[14.2]

Katayama discloses storing “situation data during a certain period before and after the situation data whose content meets the predetermined condition” (“*driving information associated with that event*”) in “the [SDRS] 803” “[o]nly in a

¹²Citations to USAA-1008 refer to page numbers identified in the document.

case that the content meets the predetermined condition,” (“*in response to [detecting] the occurrence of a predetermined event of significance*”), e.g., when “an accident occurs.” USAA-1024, [0046], [0050]; USAA-1003, ¶¶275-277.

Katayama also describes, after detecting that “the predetermined conditioned is satisfied (in case that it is judged a hiyari hatto (risk incident) or an accident occurs), the data administration section 804 reports the driver about this event.”

USAA-1024, [0050]. In response, the situation data is stored to the SDRS 803 only after the driver determines the situation as the risk incident or accident and pushes the button switch 5 and then the data administration section 804 receives the input data indicating that the risk incident or accident occurs. USAA-1024, [0046], [0051]; *see also* USAA-1008, 32-33, Fig. 4; USAA-1003, ¶276.

Thus, Peng-Chatterjee-Katayama renders obvious storing relevant driving data to in memory, in response to detecting the accident. §III.C.1(b)); USAA-1024, [0046], [0051]; USAA-1003, ¶¶275-277.

[15.1]

See [14.1]. USAA-1003, ¶278.

[15.2]

Peng discloses “communicat[ing] data associated with application 50” to “a **remote data storage system 152**” (“*a remote data-logging system*”) for storage. USAA-1005, [0058], [0142].

Katayama ([14.2]) discloses, “[o]nly in a case that the content meets the predetermined condition,” such as “a hiyari hatto...or an accident”, transferring “situation data during a certain period before and after the situation data whose content meets the predetermined condition” (“*driving information associated with that event*”) to “the [SDRS] 803 ... **or/and a predetermined area of the removable recording device 7.**” USAA-1024, [0046], [0050]; *see also* USAA-1008, 30, 32-35; USAA-1003, ¶¶242-243. Specifically, “the communication device 6 [] **transmits the situation data** stored in the [SDRS] 803 **to the outside, the detachable record device 7.**” USAA-1024, [0063].

Thus, Peng-Chatterjee-Katayama renders obvious transmitting relevant driving data to a remote data storage system, in response to detecting the accident.

§III.C.1(b)); USAA-1005, [0058], [0142]; USAA-1024, [0046], [0050], [0063]; USAA-1003, ¶¶279-282 ¶.

3. Claims 26, 32, 33, 35, 36

Peng-Chatterjee-Katayama renders these claims obvious as explained above for the corresponding claims listed in the table below. USAA-1003, ¶283.

Claim Limitation	Corresponding Limitations
[6.1]	[26.1]
[6.2]	[26.2]
[14.1]	[32.1]
[14.2]	[32.2]

Claim Limitation	Corresponding Limitations
[15.1]	[33.1]
[15.2]	[33.2]
[9.1]	[35.1]
[9.2]	[35.2]
[9.3]	[35.3]
[9.4]	[35.4]
[10.1]	[36.1]
[10.2]	[36.2]

D. [GROUND 1D] – Peng, Chatterjee, Katayama and Balachandran Render Claims 7 and 27 Obvious

1. Analysis

(a) *Balachandran*

Balachandran describes an emergency response technique for “enabling emergency call initiations in response to the detection of a vehicle accident.”

USAA-1007, Abstract, 1:34-47, 2:46-63; USAA-1003, ¶122.

(b) *Peng-Chatterjee-Katayama-Balachandran Combination*

Given the likelihood that NDEs and/or accidents can involve an emergency situation where a driver may be unable to respond, a POSITA would have naturally looked to supplement the response technique of *Peng-Chatterjee-Katayama* to further include emergency response techniques well-known by the Critical Date.

USAA-1007, 1:11-30; USAA-1024, [0050]; USAA-1003, ¶¶284- 292; §III.C, [2],

[6.1]-[6.2]),

Based on Balachandran, a POSITA would have been motivated to supplement the HMD's functionality in *Peng-Chatterjee-Katayama* to perform Balachandran's emergency response techniques, following detection of an accident, thereby enabling the HMD to provide beneficial emergency responses, e.g., calling an emergency operator and preventing injuries/casualties. USAA-1007, Abstract, 1:6-30, 2:52-63, 4:18-21.; USAA-1003, ¶¶287-291. A POSITA would have performed this modification since Balachandran's emergency response technique would have naturally extended the existing techniques for verifying accidents in the combination (§III.C.1(b)) to further account for circumstances involving an unresponsive driver in distress. *Id.*

A POSITA would have found it obvious and with a reasonable expectation of success to configure the *Peng-Chatterjee-Katayama-Balachandran* device, upon having detected an accident, to activate a device timer, provide notification of timer activation, and delay initiating an emergency call unless aborted by the driver. USAA-1007, Abstract, 2:52-63, 4:18-21; USAA-1003, ¶291-292; *see also* USAA-1021-1023; USAA-1005, [0006], [0029], [0033]; USAA-1024, [0040], [0048]-[0050]; USAA-1007, 2:52-63, 4:18-21. A POSITA would have perceived configuring the device to incorporate Balachandran's emergency response techniques as an obvious implementation detail. USAA-1005, [0148]-[0149], [0024],

[0074], Fig. 5; USAA-1003, ¶291.

A POSITA would have had a reasonable expectation of success in the combination since “several vehicle monitoring systems by the Critical Date were similarly capable of providing emergency response techniques.” USAA-1003, ¶292.

2. Claims 7, 27

[7.1]/[27.1]

The *Peng-Chatterjee-Katayama-Balachandran* HMD would have been obviously configured to “provide the driver real time feedback regarding [NDEs],” such as accidents. [6.1]; USAA-1005, [0061], [0001], [0057], [0059]; USAA-1024, [0050]; USAA-1003, ¶293. Specifically, the combination would leverage Peng’s disclosure of providing feedback and supplement the HMD’s functionality in *Peng-Chatterjee-Katayama* to perform Balachandran’s emergency response techniques and thereby enable the combination to provide beneficial emergency responses. USAA-1005, [0057]; USAA-1007, Abstract; USAA-1003, ¶293; §III.D.1(b). For example, a POSITA would have configured the mobile device to provide feedback to notify a user that an emergency call has been scheduled after a time period specified by a timer. USAA-1007, 2:53-60; USAA-1003, ¶293.

[7.2]/[27.2]

Balachandran teaches offering the driver an option to abort or cancel the emergency call and “[i]f the individual discontinues the emergency call...the timer

35 resets.” USAA-1007, Abstract, 3:1-5. A POSITA would have obviously configured the combination to receive a user abort command (“*user interaction*”) to cancel the scheduled emergency call to be initiated after a time period specified by a timer. USAA-1007, 2:64-3:6, 4:22-31; USAA-1003, ¶294.

E. [GROUND 1E] – Peng, Chatterjee and Riemer Render Claims 11-13, 29-31 Obvious

1. Analysis

a) Riemer

Riemer describes “[a] portable device includes a safety feature that prevents some forms of use when the device is moving.” USAA-1028, Abstract; USAA-1003, ¶¶123-124. The cell phone can be “configured to disable transmission and reception of voice/text,” if it is “moving faster than walking speed,” such as driving. USAA-1028, Abstract, [0002], [0066], [0074]. Riemer’s techniques can add to or extend a portable electronic device’s functionality, its applications, and the communications network it uses while a device user is driving, improve driver safety. USAA-1028, [0031], [0002].

b) Peng-Chatterjee-Riemer Combination

A POSITA looking to implement Peng-Chatterjee in a practical setting would have looked to solutions to address the normal use of the phone to address the user’s need while accounting for “driving safety.” USAA-1028, [0005]-[0006]; USAA-1005, Abstract, [0002]-[0003]; USAA-1003, ¶295; §III.A.1, [2].

Hence, a POSITA would have recognized that it was well-known by the Critical Date to incorporate safety measures to address the safety concerns associated with using portable devices while driving a vehicle. USAA-1028, [0005], [0022]-[0024]; USAA-1003, ¶296.

Based on Riemer, a POSITA would have recognized that incorporating Riemer's features into the combination device would allow the user to continue normal use of the device while driving to provide improved safety. USAA-1028, Abstract, [0002], [0031]; USAA-1003, ¶297.

A POSITA would have found it obvious and had a reasonable expectation of success to add/incorporate Riemer's safety features into the mobile device's application to "enhance[] the answering and responding to incoming calls, emails, text messages in the environment of a portable electronic device," and "provide[] hands-free and voice-based mechanisms to respond." USAA-1028, [0031], [0034]; USAA-1003, ¶¶297-299; *see also* USAA-1005, [0031]; USAA-1028, [0034].

2. Claims 11-13, 29-31

[11]/[29]

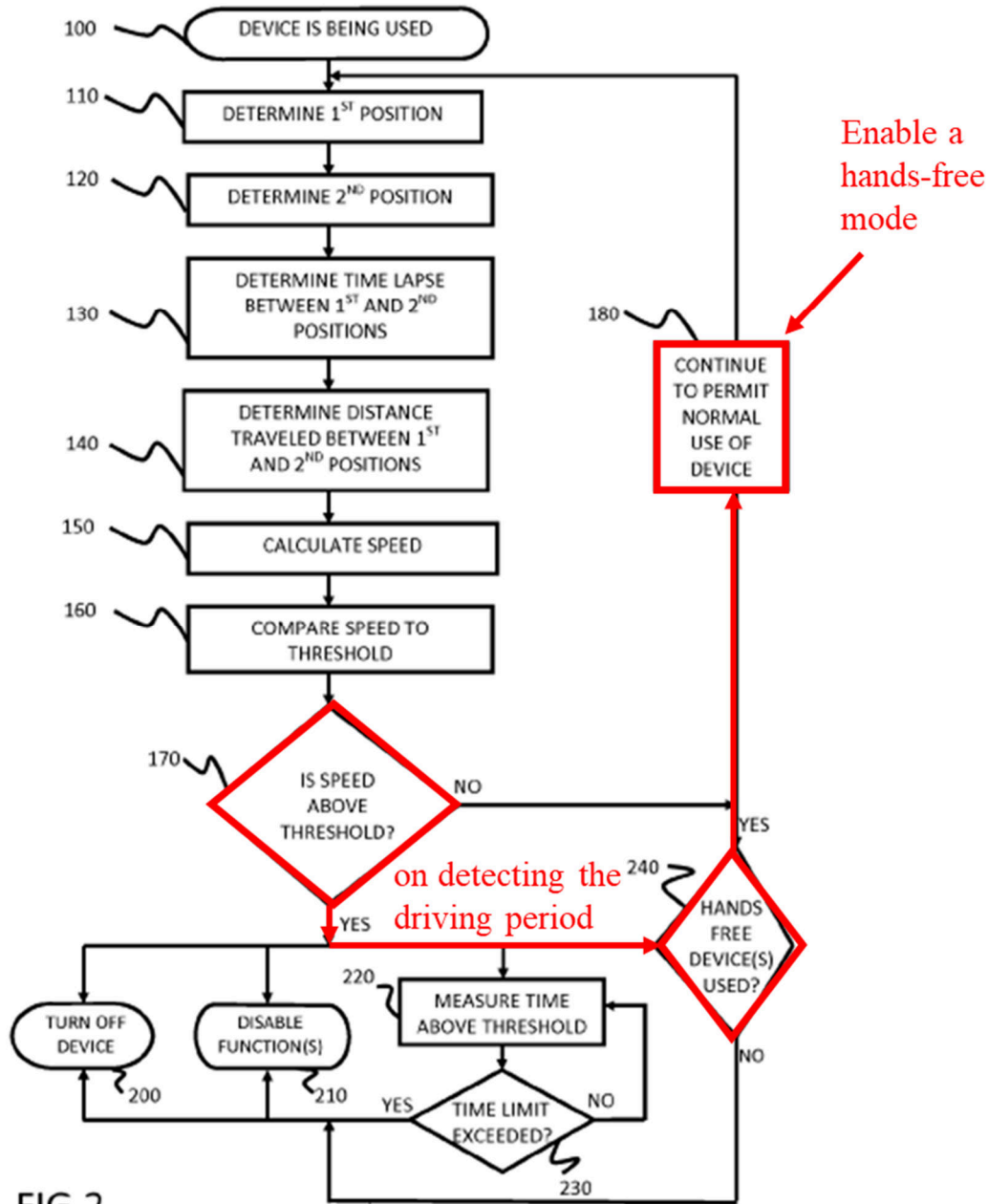
The combination renders obvious [11]/[29]. USAA-1003, ¶¶300-302; §III.A.1, [2]. A POSITA would have found it obvious to incorporate Riemer's

safety measures such as “manag[ing] incoming and outgoing calls, alerts, and messages while a user is driving a motor vehicle” (“*manag[ing] voice-calls incoming to the mobile telecommunications device during a driving period*”), e.g., to “add[] to or extend[] the functionality” of the application of the Peng-Chatterjee device. USAA-1028, [0031]-[0032], [0002]; USAA-1003, ¶¶301-302; §III.E.1(b).

[12]/[30]

See §III.A.1, [1.10], [2]. USAA-1003, ¶¶303-307.

In FIG. 2, Riemer describes “upon a determination (170) that the speed is in excess of the threshold,” “a determination is made as to whether **the hands-free device** is being used,” and if so, “the method may include continuing to permit normal use of the portable electronic device [with the hands-free device].” USAA-1028, [0065]-[0066].



USAA-1028, Fig. 2 (annotated)

A POSITA would have recognized that, in Riemer's context of "managing [] portable electronic devices and [their] functions" upon "detect[ing] when a porta-

ble electronic device user is driving,” Riemer’s disclosure of “upon a determination (170) that the speed is in excess of the threshold” is “*on detection of the driving period*” because the term “driving mode,” and “safe driving mode” refers to the behavior of a portable electronic device being modified when it detects traveling at driving speed, or when user defined safety thresholds are met. USAA-1028, [0027]-[0028], [0036]; USAA-1028, [0042]; USAA-1003, ¶305.

A POSITA would have understood that “permit[ting] normal use of the portable electronic device (20) [with **the hands-free device**]” is an example of “*a hands-free mode of operation*” because the hands-free device permits “transmission and reception of **voice-only** communications.” USAA-1028, [0065]-[0066]; USAA-1003, ¶306.

Thus, Peng-Chatterjee-Riemer renders obvious this limitation. §III.E.1(b); USAA-1003, ¶307.

[13]/[31]

Peng discloses “[i]nput/output devices 38 may include “**voice activated** interfaces.” USAA-1005, [0031]. Riemer discloses “*the hands-free mode of operation*” of permitting “transmission and reception of voice-only communications” includes “permit[ting] voice activated dialing and/or voice activated answering.” USAA-1028, [0065]-[0066]. Riemer further explains that “[v]oice activated dialing may also be supported by ... the **voice command**....” USAA-1028, [0144],

[0130], [0135]. A POSITA thus would have readily understood that the combination discussed in §III.E.2([12] renders obvious that *the hands-free mode of operation comprises enabling voice-activated commands*. USAA-1003, ¶¶308-310.

**F. [GROUND 1F] – Peng, Chatterjee and Berkobin Render
Claim 55 Obvious**

1. Analysis

b) Berkobin

Berkobin discloses “determining driver behavior based on vehicle operating parameters and adjusting insurance premiums accordingly.” USAA-1010, Abstract. Berkobin notes that the “methods and systems can employ Artificial Intelligence [AI] techniques such as machine learning and iterative learning,” such as “neural networks.” *Id.*, [0031]; USAA-1003, ¶125.

c) Peng-Chatterjee-Berkobin Combination

Techniques for using AI to evaluate driver information had been well-known by the Critical Date. USAA-1010, [0031]; USAA-1025, [0047]; USAA-1014, [0094]; USAA-1003, ¶311. Also well-known were the improvements offered by AI, such as superior performance when the inputs are complex, features of the input data cannot be readily discerned, or the relationships between input data are complex and nonlinear. *Id.* Dr. Michalson explains that AI “algorithms are also sophisticated, automatic, and objective for analysis of high-dimensional and multi-

modal motion data.” *Id.* A POSITA would have therefore been motivated to employ AI to identify unsafe driving behaviors from motion data recorded for a vehicle. *Id.*

Peng describes processing the driving data to calculate one or more driving behavior metrics and/or scores, identify “NDEs,” and determine the severity of such events. USAA-1005, [0068], [0078]-[0138]. A POSITA would have recognized that these calculations can be advantageously accomplished using AI algorithms because statistical classification algorithms that use AI technology “are typically used in pattern recognition systems” and are particularly suitable for handling multi-dimensional data such as Peng’s driving data. USAA-1025, [0047]; USAA-1005, [0044], [0066]; USAA-1003, ¶312.

Moreover, a POSITA would have been motivated to incorporate AI technologies (e.g., as taught by Berkobin) into *Peng-Chatterjee* system to calculate driving behavior metrics and/or scores and identify NDEs because AI technologies can have improved flexibility, scalability, and accuracy in predicting and identifying unsafe driving behaviors, especially given Peng’s desire to “leverage smart phones to quantify and differentiate an individual’s insurance risk base [sic] on actual driving behaviors and/or driving environment.” USAA-1005, [0165]; USAA-1003, ¶313.

A POSITA would have looked to techniques for improving accuracy in

driver safety monitoring, and in doing so, identified AI as an available tool to process driving data recorded by the HMD in identifying unsafe driving behaviors.

USAA-1003, ¶¶311-314. A POSITA would also have had a reasonable expectation of success in the *Peng-Chatterjee-Berkobin* combination. *Id.*

2. Claim 55

Peng-Chatterjee-Berkobin renders obvious the following limitations of claim 55 as explained above for the corresponding claim 54 limitations listed in the table below. USAA-1003, ¶315.

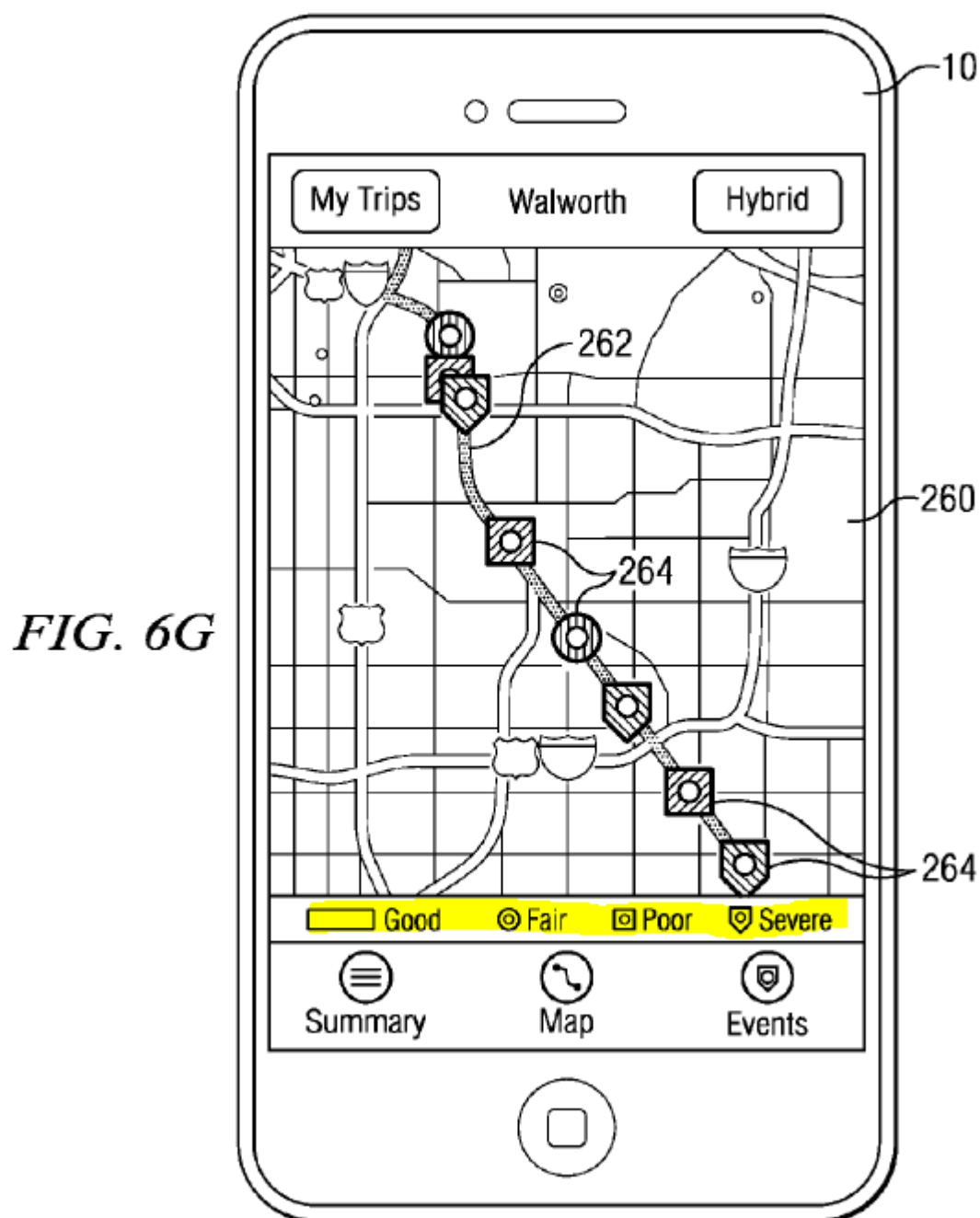
Claim 54 Limitation	Corresponding Limitations
[54.1]	[55.1]
[54.2]	[55.2]
[54.3]	[55.3]
[54.4]	[55.4]
[54.5]	[55.5]
[54.6]	[55.6]
[54.7]	[55.7]
[54.8]	[55.9]
[54.9]	[55.10]
[54.10]	[55.11]

[55.8]

The term “neural network” appears once in the ’879 specification, simply repeating the claim 55’s language. USAA-1001, 6:61-7:3. The ’879 specification lacks any discernible disclosure relating to specifics of how a neural networks is

used to identify acceptable or unacceptable driving patterns. USAA-1003, ¶316.

A POSITA would have understood that NDEs with “good” levels would represent acceptable driving patterns, whereas NDEs with “severe” levels would represent unacceptable driving patterns. *See* USAA-1005, Fig. 6G (identifying NDEs and their “severity,” e.g., “good,” “fair,” “poor,” and “severe”), [0022], [0055], [0133], [0163]; USAA-1003, ¶317. Peng’s information can “help drivers improve their driving behavior” e.g., by “identify[ing]...and display[ing]...areas of needed improvement.” USAA-1005, [0023], [0060]; USAA-1003, ¶318.



USAA-1005, FIG. 6G (annotated).

Berkobin describes using AI techniques, such as a neural network, to process sensor data and evaluate driving information. USAA-1010, [0002], [0031]. As

discussed (§III.F.1(b)), in *Peng-Chatterjee-Berkobin*, the HMD would have been obviously configured to use a neural network to determine whether the driving information represents a NDE with a “good” level (“*acceptable*”) or a NDE with a “severe” level (“*unacceptable*”). USAA-1005, [0022], [0055], [0133], [0163], FIG. 6G; USAA-1003, ¶¶316-320.

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

Consistent with Congressional intent, the goals of *Fintiv*, and the interim guidance issued by Director Vidal on 06/21/2022, USAA asks the Board to consider the challenges raised in this Petition. IPR2020-00019, Paper 11, 6 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). First, a holistic analysis of the *Fintiv* framework favors institution.¹³

Even were that not the case, the Petition presents compelling challenges and, for at least that additional reason, “the PTAB should not discretionarily deny institution under *Fintiv*.” USAA-1065, 3-5; IPR2022-01242, Paper 23 at 3, 5-6 (Feb. 27, 2023) (precedential) (“*Commscope*”).

¹³ Apart from Petitioner’s showing that the *Fintiv* factors favor institution, the *Fintiv* framework should not be followed because the framework (1) exceeds the Director’s authority, (2) is arbitrary and capricious, and (3) was adopted without notice-and-comment rulemaking.

Factor 1 (possibility of a stay) is at worst neutral, as the Board has indicated that it “will not attempt to predict” how a district court might adjudicate a future motion to stay, and neither party has yet requested stay. *Fintiv*, 12; IPR2019-01393, Paper 24, 7 (June 16, 2020) (“*Sand Revolution*”) (informative); IPR2020-01019, Paper 12, 14 (Dec. 1, 2020) (“*Sotera*”) (precedential).

Factor 2 (proximity of trial date to final written decision) favors institution. USAA has been diligent. PO filed its complaint on 5/11/2022, and this Petition has been prepared concurrent with five other petitions challenging related patents, each filed well in advance of the statutory bar date. IPR2020-00156, Paper 10, 9 & n.8 (June 15, 2020) (“*Seven*”); USAA-1004.

Although the District Court—one of the busiest patent courts—has set an estimated March 2024 trial date, “scheduled trial dates are unreliable and often change.” USAA-1065, 8; USAA-1066, 5. Thus, “the proximity to trial should not alone outweigh” other relevant factors. *Id.*, 8.

Indeed, applying the District’s median time-to-trial of about 29.5 months (USAA-1067, 37) to the complaint filing date suggests a jury trial in late October 2024. Based on the 18-month IPR schedule, the Board would be expected to issue its Final Written Decision (“FWD”) before November 2024 (i.e., around the same time as the median-expected trial). USAA-1065, 9.

Factor 3 (investment in parallel proceedings) favors institution. This Petition is being filed at an early stage of the litigation, which “has weighed against exercising the authority to deny institution....” *Seven*, 11-13 (quoting *Fintiv*, 11).

Factor 4 (overlap in issues) favors institution because the Petition’s Grounds are materially different from any that might be raised in litigation. PO presently alleges infringement of the ’879 patent’s claims 1, 2, 4-7, 15, 18-21, and 26. But its contentions are preliminary, and PO has not committed to limiting its assertion to only these claims.

Lacking an indication from PO of the full complement of claims for which infringement will ultimately be alleged by PO in this or future litigation, USAA challenges all claims of the ’879 patent. USAA-1075, 6. Accordingly, only this proceeding addresses the patentability of a material number of the Challenged Claims. *Seven*, 21.

Furthermore, to eliminate any doubt as to the absence of meaningful overlap between the Litigation and IPR, USAA stipulates that upon institution of this Petition, USAA will not seek resolution in the District Court of any ground of invalidity utilizing any of Peng, Chatterjee, Katayama, Tamir, Balachandran, Riemer or Berkobin. USAA-1074. By this stipulation, Factor 4 weighs heavily against denial of institution because, upon institution, there would be ***zero overlap*** between

the prior art in this IPR and the prior art in District Court. *See* IPR2021-00972 Paper 10, 13-16 (Dec. 8 2021) (“*AliveCor*”); IPR2021-00033, Paper 13, 14 (April 30, 2021).

Factor 5 (overlap in parties) is, at worst, be neutral. The Litigation involves the same parties. The *Fintiv* decision “says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant.” IPR2020-00122, Pap. 15, 10 (Crumbly, dissenting); *Fintiv*, 13-14; *Snap*, 16.

Factor 6 (other circumstances) compels institution. “[T]he PTAB will not deny institution...under *Fintiv*...when a petition presents compelling evidence of unpatentability....” USAA-1065 (*Director’s Guidance*), 3-5, 9; *Fintiv*, 14-15.

This Petition’s merits are compelling. Institution would result in a finding of unpatentability and the strength of the merits alone is enough to outweigh any inefficiencies born of parallel litigation. USAA-1065, 3-5, 9; *Fintiv*, 14-15. Further, institution would *promote* the AIA’s objectives. Sen. Rep. No. 110-259 (2008); H.R. Rep. No. 112-98, pt. 1, 39-40; *Snap*, 16-19; *Commscope*, 4.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. USAA-1003, ¶¶13-323. USAA authorizes charge of fees to Deposit Account 06-1050.

VI. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

United Services Automobile Association (“USAA”) is the real party-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The ’879 Patent is the subject of a civil action, *Auto Telematics Ltd. v. United Services Automobile Association*, 6:22-cv-00474-ADA-DTG, W.D. Tex., filed May 11, 2022. USAA-1004. USAA is concurrently filing two additional petitions challenging the ’879 patent (IPR2023-00857, IPR2023-00859). USAA is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the ’879 Patent.

USAA has also filed petitions for *inter partes* review for other patents related to the ’879 patent, including petitions for the U.S. Pat. No. 9,633,487 (IPR2023-00518, IPR2023-00519) and U.S. Pat. No. 10,192,369 (IPR2023-00768, IPR2023-00769, IPR2023-00770).

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

USAA provides the following designation of counsel.

Lead Counsel	Backup counsel
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D. Service Information

Please address all correspondence and service to the address listed above.

USAA consents to electronic service by email at IPR36137-0027IP2@fr.com (ref-
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Respectfully submitted,

Dated 5/4/2023

/Grace J. Kim/

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,978 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated 5/4/2023

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on May 4, 2023, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided by Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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