Similar Products (Antoino Gavin Nathan)

Product	Price 0-5	Effectiveness of how much it wakes you 0-10	Easiness to install 0-5	How well it detects you are sleepy 0-10	How long it last 0-3	Score x/33
1	1	4	1	7	3	16
2	5	7	2	10	1	25
3	5	2	2	3	1	13
4	2	6	4	10	2	24
5	3	5	2	7	2	19
6	3	6	4	10	2	25
7	3	6	1	10	3	23
8	3	8	2	10	1	24
9	3	10	2	3	1	19

Patents at bottom

0 is best

1. Assistant Sleeping Alarm Car Driver Sleepy Reminder Driving Anti Sleep Prevention Sleepy for Night Shifts Night Broadcasts $8.27

2. BLUEWAKE Anti-Fatigue, Anti-Drowsiness Device for Drivers, Students, Truckers, Travelers & Office Workers - Patented Blue Light Stimulant for Increased Focus & Staying Awake (Blue) ($399, golly goo that expensive)

3. Driver Fatigue Alarm Device, Anti Sleep Alarm, Eye Blinking Detection Face Reading Fatigue Driving Warning Alarm, Anti Sleep Dangerous Driving Monitor for Drivers Security Guards $118.92 (zoo wee mama that is a crazy price)

4. DB Drowse Buster-E Anti-Sleepy Gadget - Energy Booster & Fatigue Relief, Acupuncture, Enhance Focus, Alertness Aid, Instant Stay Awake for Drivers, Students, Office Workers and All-Night Gaming

5. LGI Driver Fatigue Alarm 3 in 1 Inside Sleep Alarm for Drivers Security Guards Nap Zapper Alarm Security Car Alarm System Drivers Security Guards Anti Sleep Alarm Nap Alert.

$39.99

6. Gatorade Energy Chews, Cool Blue, Caffeine Free, B12, 1.06 oz - 100 Calorie Pouches, (16 Pack) ($31.97)

7. DriveID Cell Control iPhone Android Device Stop Distracted Driving 2016 30$

8. Fatigue Driving Warning Device Face Recognition Head Up Driving Safe System Pupil Recognition Fatigue Driving Alarm Accurate 40$

US012112555B1

(12) **United States Patent**
Lee et al.

(10) **Patent No.: US 12,112,555 B1**
(45) **Date of Patent: Oct. 8, 2024**

(54) **DROWSY DRIVING DETECTION**

(71) Applicant: **Samsara Inc.**, San Francisco, CA (US)

(72) Inventors: **Sung Chun Lee**, Fairfax, VA (US); **Nathan Hurst**, Seattle, WA (US); **Yan Wang**, Mercer Island, WA (US); **Olamide Akintewe**, Potterville, MN (US); **Justin Levine**, Erie, CO (US); **Kenshiro Nakagawa**, San Francisco, CA (US); **Cole Jurden**, Kansas City, MO (US); **Rachel Demerly**, New York, NY (US); **Aravindh Ramesh**, San Francisco, CA (US); **Kevin Lai**, Redmond, WA (US); **Jovanna Bubar**, Los Angeles, CA (US); **Shirish Nair**, Shoreline, WA (US); **Malsie Wang**, Seattle, WA (US)

(73) Assignee: **Samsara Inc.**, San Francisco, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/634,353**

(22) Filed: **Apr. 12, 2024**

(51) **Int. Cl.**
G06V 20/59 (2022.01)
G06V 10/774 (2022.01)
G06V 40/16 (2022.01)

(52) **U.S. Cl.**
CPC ***G06V 20/597*** (2022.01); ***G06V 10/774*** (2022.01); ***G06V 40/161*** (2022.01); ***G06V 40/168*** (2022.01); ***G06V 40/174*** (2022.01)

(58) **Field of Classification Search**
CPC .. G06V 20/597; G06V 10/774; G06V 40/161; G06V 40/168; G06V 40/174
See application file for complete search history.

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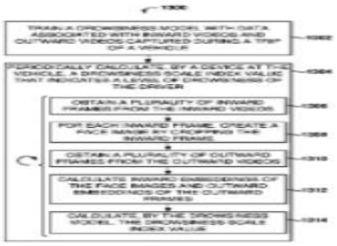
Primary Examiner — Phuoc Tran
(74) *Attorney, Agent, or Firm* — Schwegman Lundberg & Woessner, P.A.

(57) **ABSTRACT**

Techniques are presented for detecting when drivers drive while drowsy. In some implementations, a drowsiness model is trained with data associated with inward videos and outward videos captured during a trip. The inward videos capture the inside of the cabin with the driver, and the outward videos capture the view in front of the vehicle in the direction of travel. Further, a device at the vehicle periodically calculates a drowsiness scale index value that indicates the level of drowsiness of the driver. Calculating the drowsiness scale index value includes obtaining a set of inward frames from the inward videos; for each inward frame, creating a face image by cropping the inward frame; obtaining a set of outward frames from the outward videos; calculating inward embeddings of the face images and outward embeddings of the outward frames; and calculating, by the drowsiness model, the drowsiness scale index value.

20 Claims, 14 Drawing Sheets



Detects how sleepy you are with in car sensor and car sensor to detect

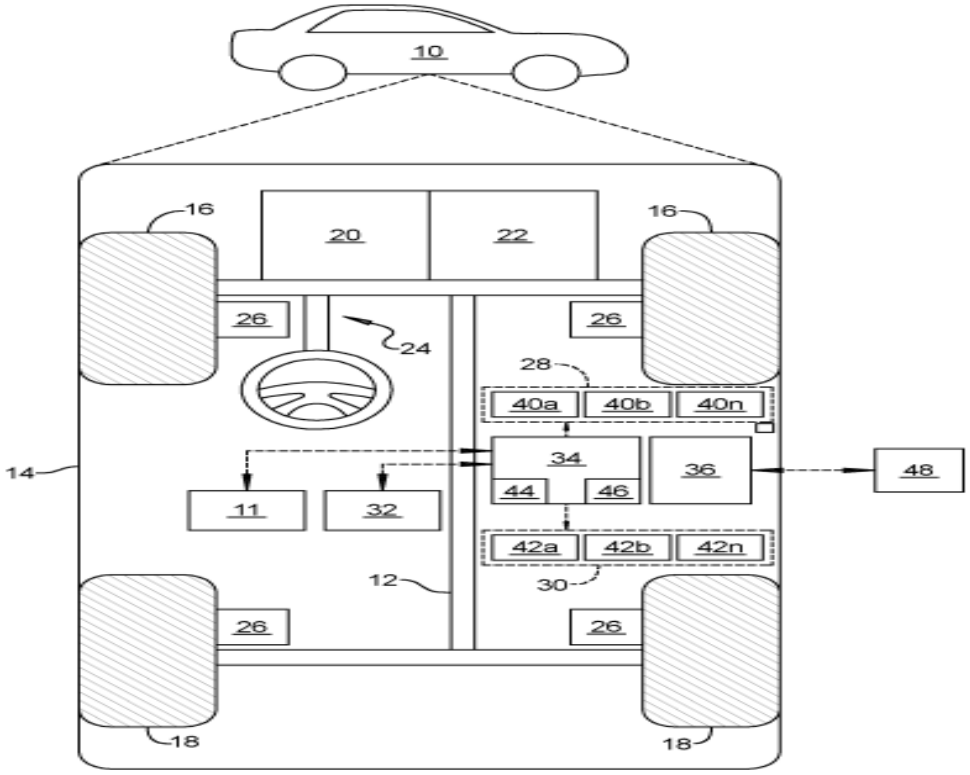


FIG. 1

This device monitors a driver's gaze behavior and patterns if it deems a driver distracted it makes the driver put in a response

US012397707B2

(12) **United States Patent**
Futterlieb et al.

(10) **Patent No.: US 12,397,707 B2**
(45) **Date of Patent: Aug. 26, 2025**

(54) **DRIVER ATTENTION SYSTEM**

(71) Applicant: **Harman Becker Automotive Systems GmbH**, Karlsbad (DE)

(72) Inventors: **Marcus Futterlieb**, Ingolstadt (DE); **Anilkumar Hariharakrishnan**, Sauerlach (DE)

(73) Assignee: **HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH**, Karlsbad-Ittersbach (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 254 days.

(21) Appl. No.: **18/311,123**

(22) Filed: **May 2, 2023**

(65) **Prior Publication Data**

US 2023/0406203 A1 Dec. 21, 2023

(30) **Foreign Application Priority Data**

Jun. 20, 2022 (EP) 22179889

(51) **Int. Cl.**
B60Q 9/00 (2006.01)
G06V 20/59 (2022.01)
(Continued)

(52) **U.S. Cl.**
CPC ***B60Q 9/00*** (2013.01); ***G06V 20/597*** (2022.01); ***H04R 1/025*** (2013.01); ***H04R 5/02*** (2013.01); *H04R 2499/13* (2013.01)

(58) **Field of Classification Search**
CPC B60Q 9/00; G06V 20/597; H04R 1/025; H04R 5/02; H04R 2499/13
See application file for complete search history.

(56) **References Cited**

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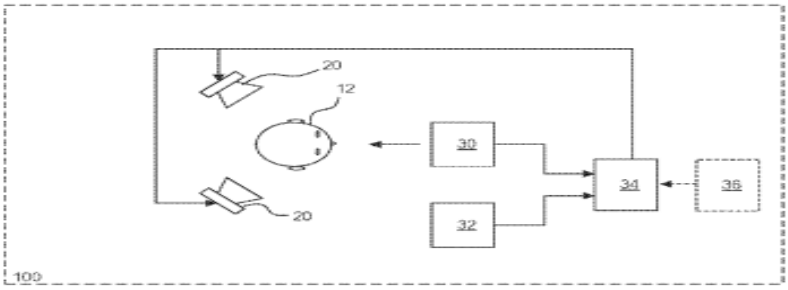
Primary Examiner — Gertrude Arthur Jeanglaude
(74) *Attorney, Agent, or Firm* — McCoy Russell LLP

(57) **ABSTRACT**

A driver attention system is configured to determine a drowsiness level of a driver of a vehicle by means of data provided by a monitoring unit configured to determine one or more driver parameters based on the current drowsiness level, determine a current driver focus level and an estimated time of remaining driver focus level, wherein the driver focus level is inversely proportional to the drowsiness level, and determine an estimated remaining travel time until a desired destination is reached by means of data provided by a navigation system. During selected conditions, a binaural beat at 20 Hz or higher is generated via at least two first loudspeakers of an audio system of the vehicle, wherein the binaural beat is audible for the driver.

17 Claims, 3 Drawing Sheets



This device detects a driver's ear pressure to determine if they are drowsy and if they are it increases the audio in the vehicle.

US 20250152908A1

(19) **United States**

(12) **Patent Application Publication**

HIWALE et al.

(10) **Pub. No.: US 2025/0152908 A1**

(43) **Pub. Date: May 15, 2025**

(54) **A METHOD AND SYSTEM FOR DETECTING DROWSINESS AND/OR SLEEP**

(71) Applicant: **KONINKLIJKE PHILIPS N.V.**, EINDHOVEN (NL)

(72) Inventors: **Sujitkumar HIWALE**, Aurangabad (IN); **Biswaroop CHAKRABARTI**, Kolkata (IN)

(21) Appl. No.: **18/836,484**

(22) PCT Filed: **Feb. 7, 2023**

(86) PCT No.: **PCT/EP2023/052888**

§ 371 (c)(1),
(2) Date: **Aug. 7, 2024**

(30) **Foreign Application Priority Data**

Feb. 17, 2022 (EP) 22157370.2

Publication Classification

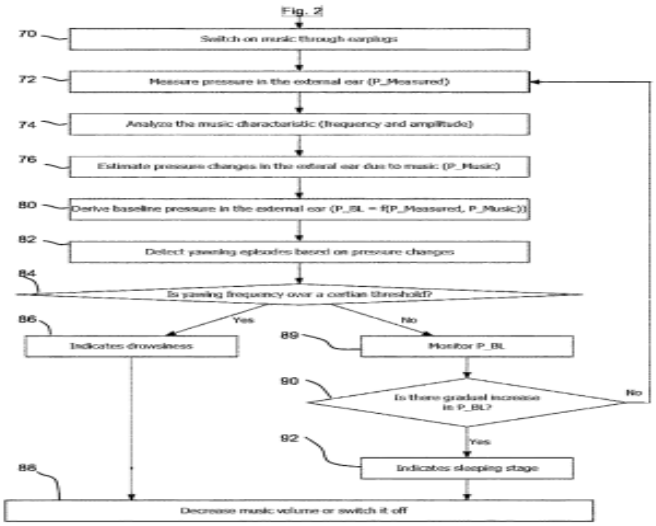
(51) **Int. Cl.**
A61M 21/00 (2006.01)
H04R 1/10 (2006.01)

(52) **U.S. Cl.**
CPC ***A61M 21/00*** (2013.01); ***H04R 1/1016*** (2013.01); ***H04R 1/1041*** (2013.01); *A61M 2021/0027* (2013.01); *H04R 2460/11* (2013.01)

(57) **ABSTRACT**

A method and system is provided for detecting drowsiness and/or sleep and then for example controlling the volume of audio delivered from an in-car speaker. A detected external ear pressure, between the ear drum and the in-ear speaker, is obtained and is processed together with the frequency and amplitude characteristics of the delivered audio. In this way, a baseline ear pressure over time is obtained. Drowsiness and/or sleep is detected from the derived baseline ear pressure, for example so that the volume of the delivered audio can be adapted accordingly.

Fig. 2



This device monitors a drivers drowsiness level and if it determines that the driver is drowsy it outputs a noise at about 20HZ from the vehicles audio system

US 20250200996A1

(19) **United States**

(12) **Patent Application Publication**

HAN et al.

(10) **Pub. No.: US 2025/0200996 A1**

(43) **Pub. Date: Jun. 19, 2025**

(54) **DEVICE FOR DETECTING DRIVER BEHAVIOR USING DEEP LEARNING-BASED OBJECT CLASSIFICATION**

(71) Applicant: **KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY-ACADEMIC COOPERATION FOUNDATION**, Daegu (KR)

(72) Inventors: **Dong Seog HAN**, Daegu (KR); **Jaeho SEONG**, Daegu (KR); **Youngjin YOON**, Busan (KR); **Minwoo YOO**, Daegu (KR)

(21) Appl. No.: **18/701,107**

(22) PCT Filed: **Oct. 7, 2022**

(86) PCT No.: **PCT/KR2022/015085**

§ 371 (c)(1),
(2) Date: **Sep. 12, 2024**

(30) **Foreign Application Priority Data**

Oct. 12, 2021 (KR) 10-2021-0134866

Publication Classification

(51) **Int. Cl.**

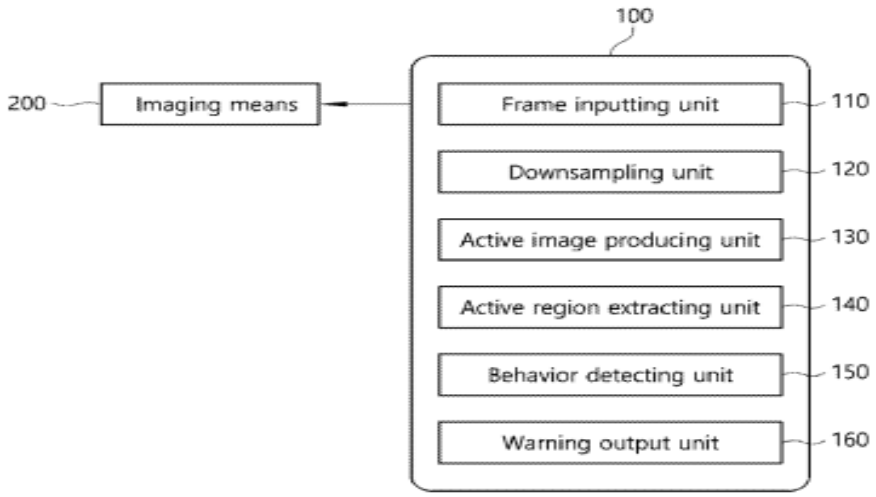
G06V 20/59	(2022.01)
B60Q 9/00	(2006.01)
G06V 10/26	(2022.01)
G06V 10/30	(2022.01)
G06V 10/32	(2022.01)
G06V 10/764	(2022.01)
H04N 7/18	(2006.01)

(52) **U.S. Cl.**

CPC ***G06V 20/597*** (2022.01); ***B60Q 9/00*** (2013.01); ***G06V 10/26*** (2022.01); ***G06V 10/30*** (2022.01); ***G06V 10/32*** (2022.01); ***G06V 10/764*** (2022.01); ***H04N 7/183*** (2013.01)

(57) **ABSTRACT**

A driver behavior detection system using deep learning-based object classification includes: a frame inputting unit for receiving image frames; a downsampling unit for downsampling resolutions of a previous frame and a current frame of the image frames; an active image producing unit for utilizing brightness values by color of the downsampled previous and current frames to produce an active image; an active region extracting unit for applying a sliding window algorithm to the produced active image to extract an active region having the biggest window value among window values; and a behavior detecting unit for applying an object classification algorithm to the extracted active region to classify and detect a driver's behavior.



This device uses a camera and monitors a drivers face to detect if they are distracted

Lex Luthor rage baiting Superman