

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.
Petitioner

v.

IMAGE PROCESSING TECHNOLOGIES LLC,
Patent Owner

Case No. IPR2017-01190
U.S. Patent No. 6,717,518

PETITIONER'S DEMONSTRATIVES FOR ORAL HEARING
(EXHIBIT 1020)

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CASE IPR2017-01190

Oral Argument

Overview of the '518 Patent

Claim Construction

Instituted Grounds for Review

Eriksson + Stringa

Ando + Suenaga

Ando + Stringa

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The '518 Patent

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

(10) **Patent No.:** US 6,717,518 B1
(45) **Date of Patent:** Apr. 6, 2004

(54) **METHOD AND APPARATUS FOR DETECTION OF DROWSINESS**
(75) Inventors: Patrick Pirim, Paris (FR); Thomas Binford, Cupertino, CA (US)

(73) Assignee: Holding B.E.V.S.A., Luxembourg (LU)

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(51) Int. Cl. G08B 23/00

(52) U.S. Cl. 340/876, 348/143, 382/117

(58) Field of Search 382/100, 103, 115, 117, 348/143, 148, 672

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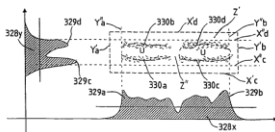
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(57) ABSTRACT

In a process of detecting a person falling asleep, an image of the face of the person is acquired. Pixels of the image having characteristics corresponding to an eye of the person are selected and a histogram is formed of the selected pixels. The histogram is analyzed over time to identify each opening and closing of the eye, and characteristics indicative of the person falling asleep are determined. A sub-area of the image including the eye may be determined by identifying the head or a facial characteristic of the person, and then identifying the sub-area using an anthropomorphic model. To determine openings and closings of the eye, histograms of shadowed pixels of the eye are analyzed to determine the width and height of the shadowing, or histograms of movement corresponding to blinking are analyzed. An apparatus for detecting a person falling asleep includes a sensor for acquiring an image of the face of the person, a controller, and a histogram formation unit for forming a histogram on pixels having selected characteristics. Also disclosed is a rear-view mirror assembly incorporating the apparatus.

39 Claims, 20 Drawing Sheets



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