

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC,
Petitioner,

v.

AMERICAN VEHICULAR SCIENCES LLC,
Patent Owner.

Case IPR2014-00646
Patent 6,772,057 B2

Before JAMESON LEE, TREVOR M. JEFFERSON, and
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Mercedes-Benz USA, LLC, filed a Petition for *inter partes* review of claims 1, 2, 4, 7, 16, 30, 31, 40, 41, 43, 46, 56, 59–62, 77, 78, and 81–83 of U.S. Patent No. 6,772,057 B2 (Ex. 1001, “the ’057 patent”). Paper 1 (“Pet.”). Patent Owner, American Vehicular Sciences LLC, filed a Preliminary Response. Paper 11 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Upon consideration of the Petition and the Preliminary Response, we conclude the information presented shows there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 1, 2, 4, 7, 16, 30, 31, 40, 41, 43, 46, 56, 59–62, 77, 78, and 81–83. Accordingly, we authorize an *inter partes* review to be instituted as to claims 1, 2, 4, 7, 16, 30, 31, 40, 41, 43, 46, 56, 59–62, 77, 78, and 81–83 of the ’057 patent.

A. Related Matters

The ’057 patent is the subject of another pending *inter partes* review: *Toyota Motor Corp. v. American Vehicular Sciences LLC*, IPR2013-00419 (instituted Jan. 13, 2014). Pet. 1–2.

B. The '057 Patent

The '057 patent, titled “Vehicular Monitoring Systems Using Image Processing,” generally relates to a vehicle monitoring arrangement for monitoring an environment exterior of a vehicle. Ex. 1001, Abstract. One embodiment of such an arrangement described in the '057 patent includes a transmitter that transmits electromagnetic waves into the environment exterior of a vehicle and one or more receivers that receive reflections of the transmitted waves from exterior objects, such as approaching vehicles. *Id.* at 14:8–12, 14:32–37, 38:7–13, Fig. 7. In a preferred implementation, the transmitter is an infrared transmitter, and the receivers are CCD (charge coupled device) transducers that receive the reflected infrared waves. *Id.* at 38:10–12, 39:25–28. One or more receivers may be arranged on a rear view mirror of the vehicle. *Id.* at 14:58–60, 38:22–25. The system also may include radar or pulsed laser radar (lidar) for measuring distance between the vehicle and exterior objects. *Id.* at 14:38–40, 39:1–6.

The waves received by the receivers contain information about exterior objects in the environment, and the receivers generate signals characteristic of the received waves. *Id.* at 14:12–14, 39:44–49. A trained pattern recognition means, such as a neural computer or neural network, processes the signals to provide a classification, identification, or location of an exterior object. *Id.* at 14:17–25, 39:49–54. Training of a neural network to provide classification, identification, or location of objects is accomplished by conducting a large number of experiments in which the system is taught to differentiate among received signals corresponding to

different objects. *Id.* at 36:22–39 (describing a neural network training session in connection with an embodiment that monitors an interior of a vehicle, particularly the passenger seat). The classification, identification, or location of an exterior object may be used to affect operation of other systems in the vehicle, e.g., to show an image or icon on a display viewable by a driver or to deploy an airbag. *Id.* at 14:21–31, 39:54–62.

C. Illustrative Claims

Of the challenged claims, claims 1, 16, 30, 40, 56, and 77 are independent. Claims 1, 16, 30, and 40 are illustrative of the claimed subject matter:

1. A monitoring arrangement for monitoring an environment exterior of a vehicle, comprising:

at least one receiver arranged to receive waves from the environment exterior of the vehicle which contain information on any objects in the environment and generate a signal characteristic of the received waves; and

a processor coupled to said at least one receiver and comprising trained pattern recognition means for processing the signal to provide a classification, identification or location of the exterior object, said trained pattern recognition means being structured and arranged to apply a trained pattern recognition algorithm generated from data of possible exterior objects and patterns of received waves from the possible exterior objects to provide the classification, identification or location of the exterior object;

whereby a system in the vehicle is coupled to said processor such that the operation of the system is affected in response to the classification, identification or location of the exterior object.

16. A monitoring arrangement for monitoring an environment exterior of a vehicle, comprising:

at least one CCD array positioned to obtain images of the environment exterior of the vehicle; and

a processor coupled to said at least one CCD array and comprising trained pattern recognition means for processing the images obtained by said at least one CCD array to provide a classification, identification or location of the exterior object;

whereby a system in the vehicle is coupled to said processor such that the operation of the system is affected in response to the classification, identification or location of the exterior object.

30. A vehicle including a monitoring arrangement for monitoring an environment exterior of the vehicle, the monitoring arrangement comprising:

at least one receiver arranged on a rear view mirror of the vehicle to receive waves from the environment exterior of the vehicle which contain information on any objects in the environment and generate a signal characteristic of the received waves; and

a processor coupled to said at least one receiver and arranged to classify or identify the exterior object based on the signal and thereby provide the classification or identification of the exterior object;

whereby a system in the vehicle is coupled to said processor such that the operation of the system is affected in response to the classification or identification of the exterior object.

40. A monitoring arrangement for monitoring an environment exterior of a vehicle, comprising:

a plurality of receivers arranged apart from one another and to receive waves from different parts of the environment

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