

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TOYOTA MOTOR CORPORATION  
Petitioner

v.

AMERICAN VEHICULAR SCIENCES LLC  
Patent Owner

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Case IPR2013-00419  
Patent 6,772,057

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Before JAMESON LEE, MICHAEL W. KIM,  
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, Toyota Motor Corporation, filed a petition (Paper 3, “Pet.”) requesting *inter partes* review of claims 1-4, 7-10, 30-34, 37-41, 43, 46, 48, 49, 56, 59-62, and 64 of U.S. Patent No. 6,772,057 (“the ’057 patent”). Patent Owner, American Vehicle Sciences LLC, filed a preliminary response (Paper 17, “Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides:

**THRESHOLD**—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 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 that there is a reasonable likelihood that Petitioner would prevail in challenging claims 1-4, 7-10, 30-34, 37-41, 43, 46, 48, 49, 56, 59-62, and 64 as unpatentable. Accordingly, we grant the petition and authorize an *inter partes* review to be instituted as to these claims of the ’057 patent.

### A. *Related Proceedings*

Petitioner indicates that Patent Owner has asserted the ’057 patent against Petitioner in *American Vehicular Sciences LLC v. Toyota Motor Corp.*, No. 6:12-cv-00410 (E.D. Tex.) (“the 410 litigation”), and also has asserted the ’057 patent in *American Vehicular Sciences LLC v. BMW Group*, No. 6:12-cv-00415 (E.D. Tex.); *American Vehicular Sciences LLC v. Subaru of Am. Inc.*, No. 6:12-cv-004230

(E.D. Tex.); and *American Vehicular Sciences LLC v. Mercedes-Benz U.S. Int'l, Inc.*, No. 6:13-cv-00309 (E.D. Tex.). Pet. 1.

*B. The '057 Patent (Ex. 1001)*

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 col. 14, ll. 8-12, 32-37; col. 38, ll. 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 col. 38, ll. 10-12; col. 39, ll. 25-28. One or more receivers may be arranged on a rear view mirror of the vehicle. *Id.* at col. 14, ll. 58-60; col. 38, ll. 22-25. The system also may include radar or pulsed laser radar (lidar) for measuring distance between the vehicle and exterior objects. *Id.* at col. 14, ll. 38-40; col. 39, ll. 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 col. 14, ll. 12-14; col. 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 col. 14, ll. 17-25; col. 39, ll. 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 col. 36, ll. 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 col. 14, ll. 21-31; col. 39, ll. 54-62.

### *C. Illustrative Claims*

Of the challenged claims, claims 1, 30, 40, and 56 are independent. Claims 1, 30, and 40 are illustrative:

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.

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 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 receivers and arranged to classify, identify or locate the exterior object based on the signals generated by said receivers and thereby 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.

Ex. 1001, col. 54, ll. 13-32; col. 55, l. 58 – col. 56, l. 6; col. 56, ll. 37-52.

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