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Lemelson et al.

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(54) **MOTOR VEHICLE WARNING AND CONTROL SYSTEM AND METHOD**

JP 4-219900 8/1992 340/903
JP 5-124529 5/1993
JP 5-143897 6/1993 340/903

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1543 days.

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(List continued on next page.)

(22) Filed: **Jun. 28, 1996**

Related U.S. Application Data

(63) Continuation of application No. 08/105,304, filed on Aug. 11, 1993, now abandoned.

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(51) **Int. Cl.**⁷ **G06K 9/00**

(57) **ABSTRACT**

(52) **U.S. Cl.** **382/104**; 340/435; 340/436; 340/903; 382/106

A system and method assists the driver of a motor vehicle in preventing accidents or minimizing the effects of same. In one form, a television camera is mounted on a vehicle and scans the roadway ahead of the vehicle as the vehicle travels. Continuously generated video picture signals output by the camera are electronically processed and analyzed by an image analyzing computer, which generates codes that serve to identify obstacles. A decision computer mounted in the controlled vehicle receives such code signals along with code signals generated by the speedometer or one or more sensors sensing steering mechanism operation and generates control signals. Such code signals may be displayed, and a synthetic speech or special sound generating and warning means used, to warn the driver of the vehicle of approaching and existing hazards. The system may also use the control signals, particularly through application of fuzzy logic, to control the operation of the brakes and steering mechanism of the vehicle to avoid or lessen the effects of a collision. In a particular form, the decision computer may select the evasive action taken from a number of choices, depending on whether and where the detection device senses other vehicles or obstacles.

(58) **Field of Search** 348/113, 114, 348/115, 116, 118, 119, 135, 139, 140, 142, 148, 149; 382/104, 215, 209, 106, 156, 103, 217, 218; 340/907, 435, 903, 901, 436; 180/168, 169, 167, 271, 274, 275; 364/424.02, 460, 461, 436-437, 425.04, 425.01, 426.01, 443, 424.032; 395/905, 900, 913

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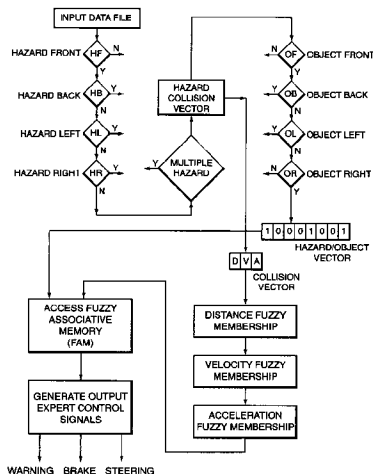
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55 Claims, 13 Drawing Sheets



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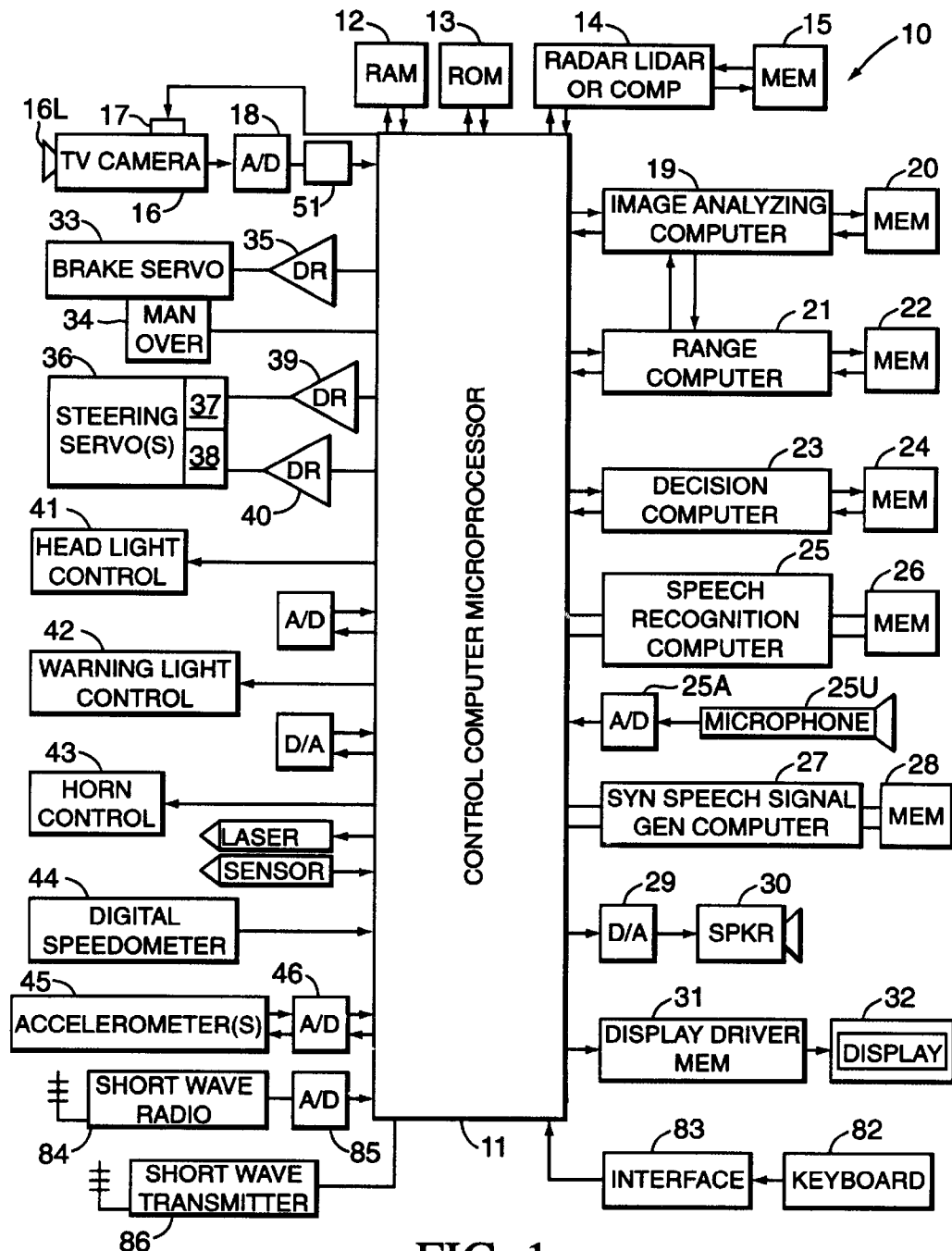


FIG. 1

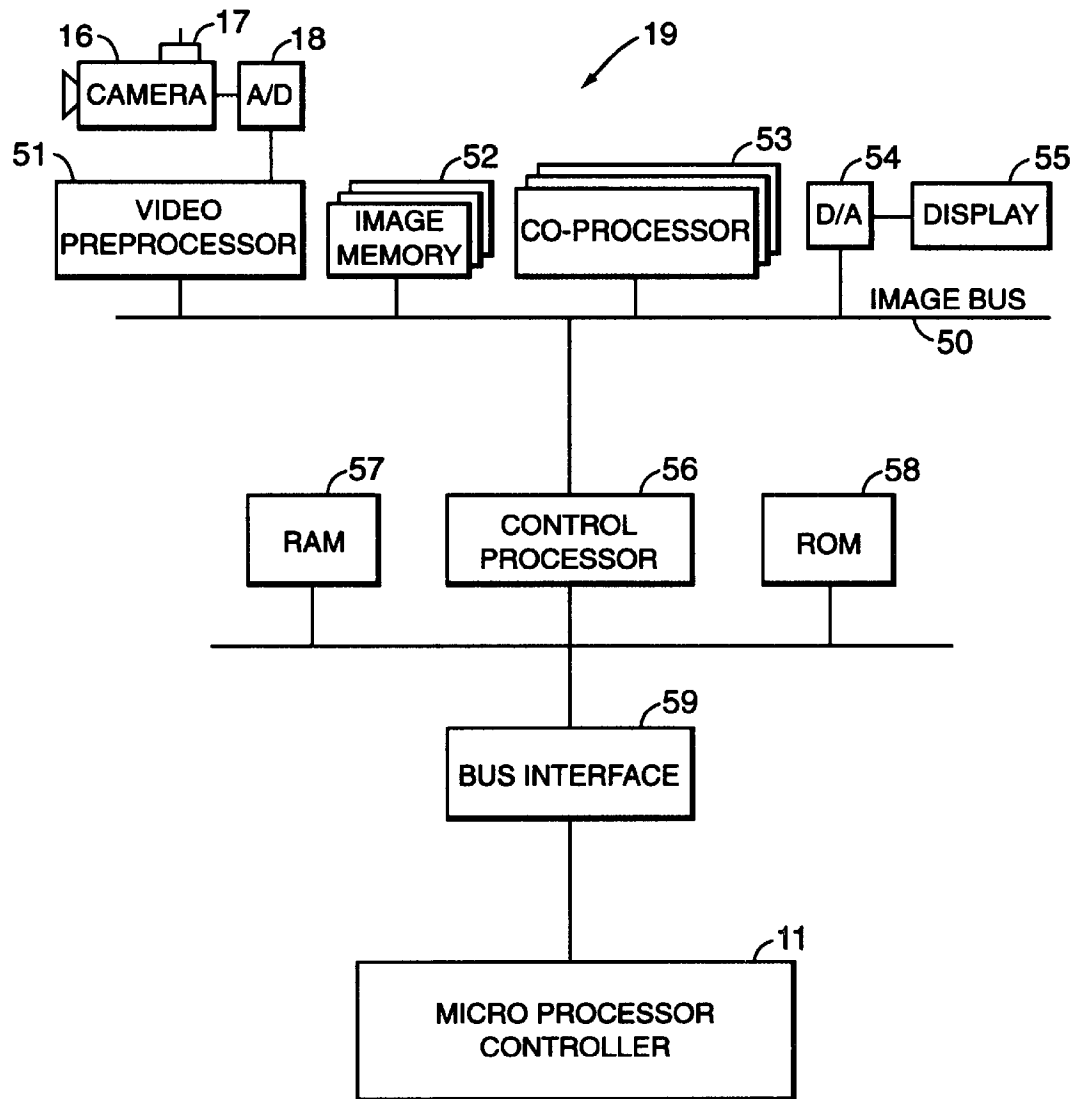


FIG. 2

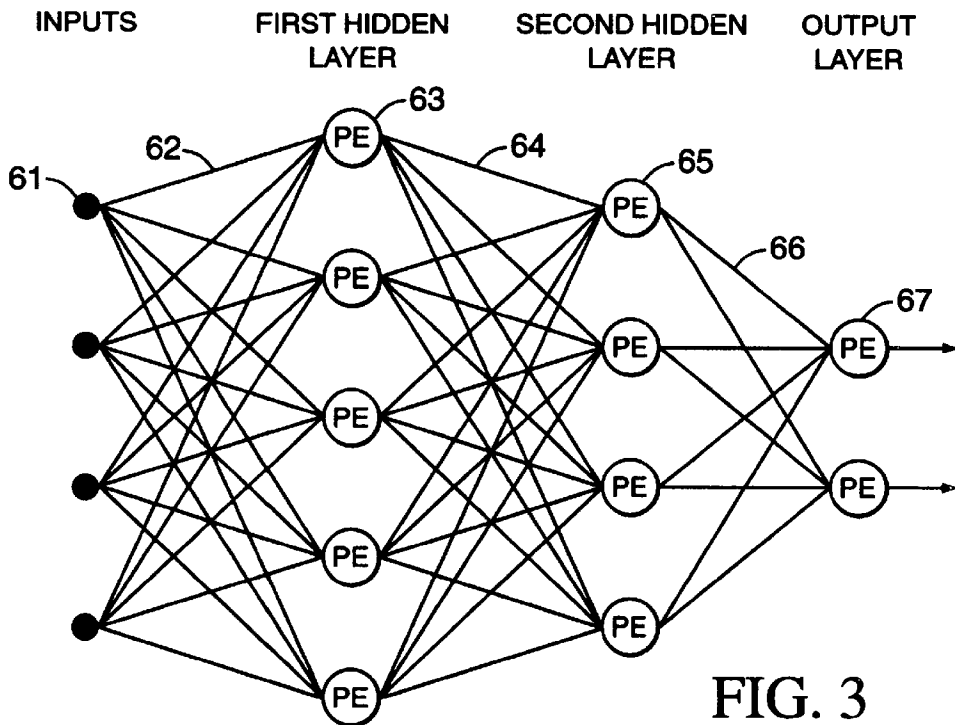


FIG. 3

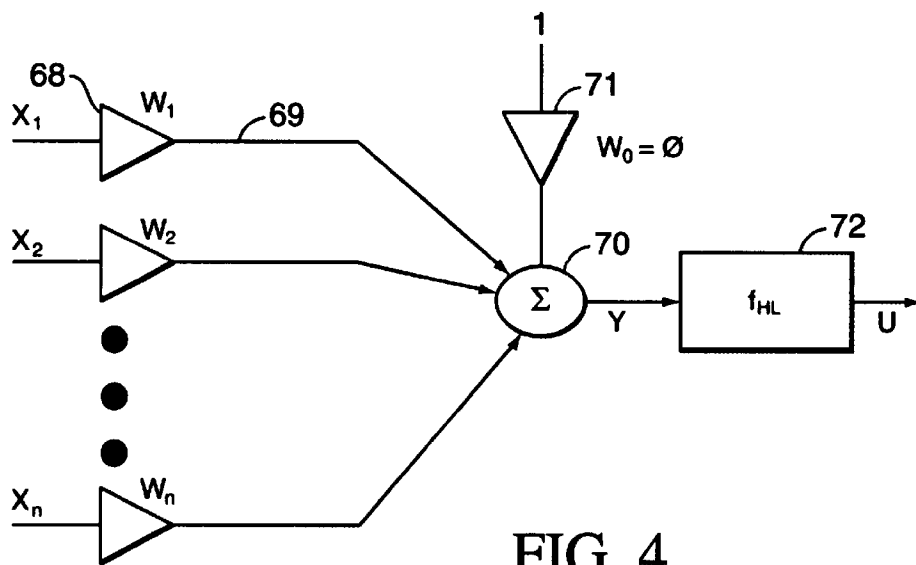


FIG. 4

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