



[54] FACIAL IMAGE PROCESSING SYSTEM

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[21] Appl. No.: 612,815

[22] Filed: Mar. 11, 1996

[30] Foreign Application Priority Data

Jul. 28, 1995 [JP] Japan ..... 7-193647

[51] Int. Cl.<sup>6</sup> ..... G06K 9/00

[52] U.S. Cl. .... 382/117; 351/209; 340/575

[58] Field of Search ..... 382/117-118, 103, 382/104; 351/209-211; 340/575, 576; 128/745; 180/272; 364/423.098, 424.051

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[57] ABSTRACT

A facial image processing system of the present invention is provided with an evaluation function calculation device which calculates shape functions (for example, an upper boundary and an approximate line representing a predetermined range of the upper boundary) representing the shape, namely, the feature of the entire eye image from an eye presence area and further calculates an evaluation function (namely, the gradient of the approximate line) from the shape function (namely, the approximate line). The facial image processing system is further provided with an opened-or-closed condition judgment device which determines a threshold value from the values K of the time-varying evaluation function and makes a judgment on whether the eye is opened or closed. Thereby, even in the case that a change in the number of continuous black pixels arranged in Y-direction when closing the eye is small owing to an eyebrow, it can be accurately judged on whether the eye is opened or closed.

32 Claims, 65 Drawing Sheets

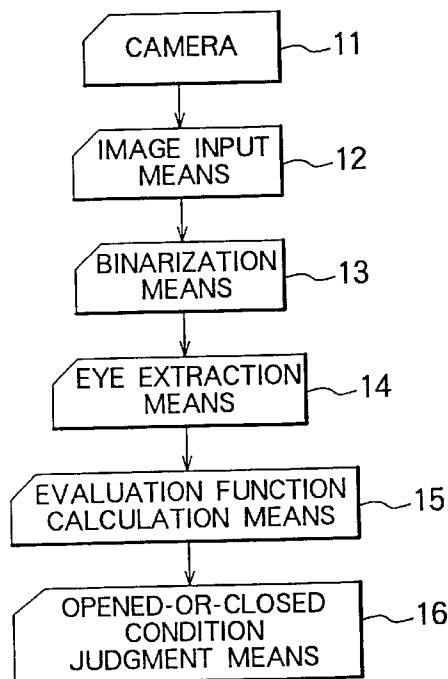


FIG. 1

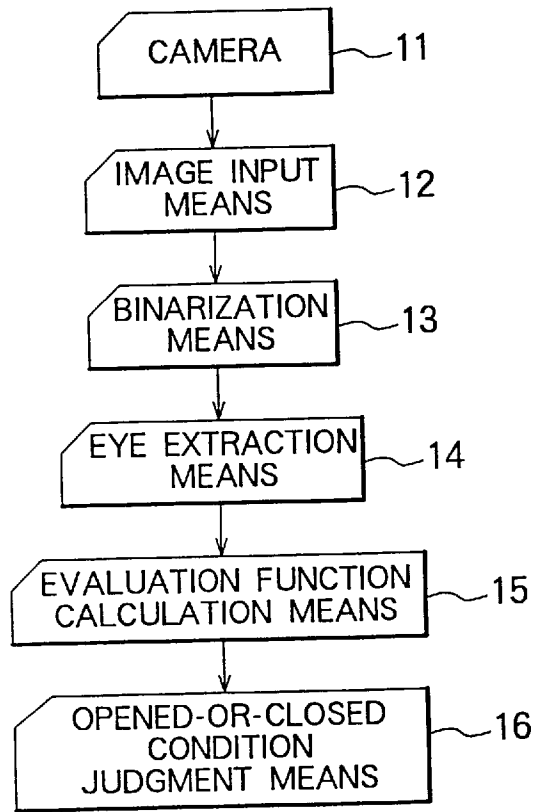


FIG. 2

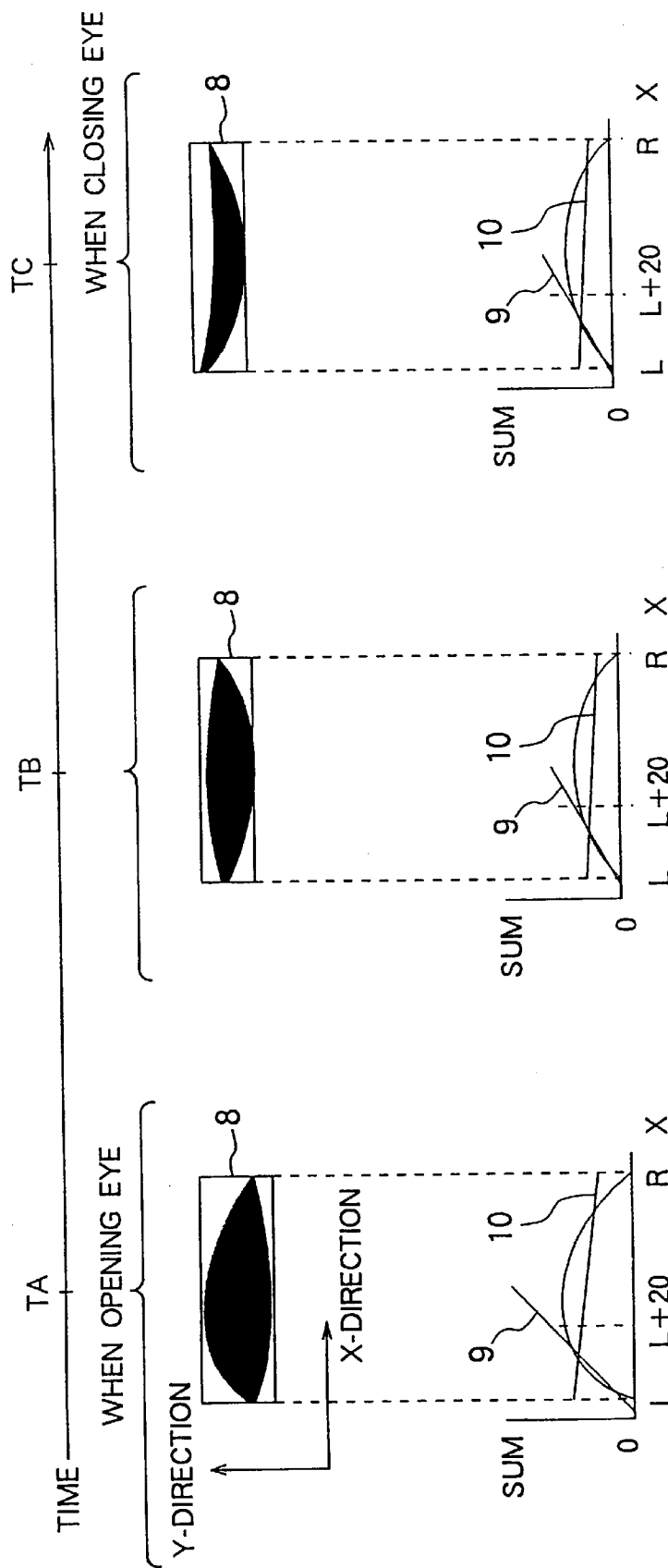


FIG. 3

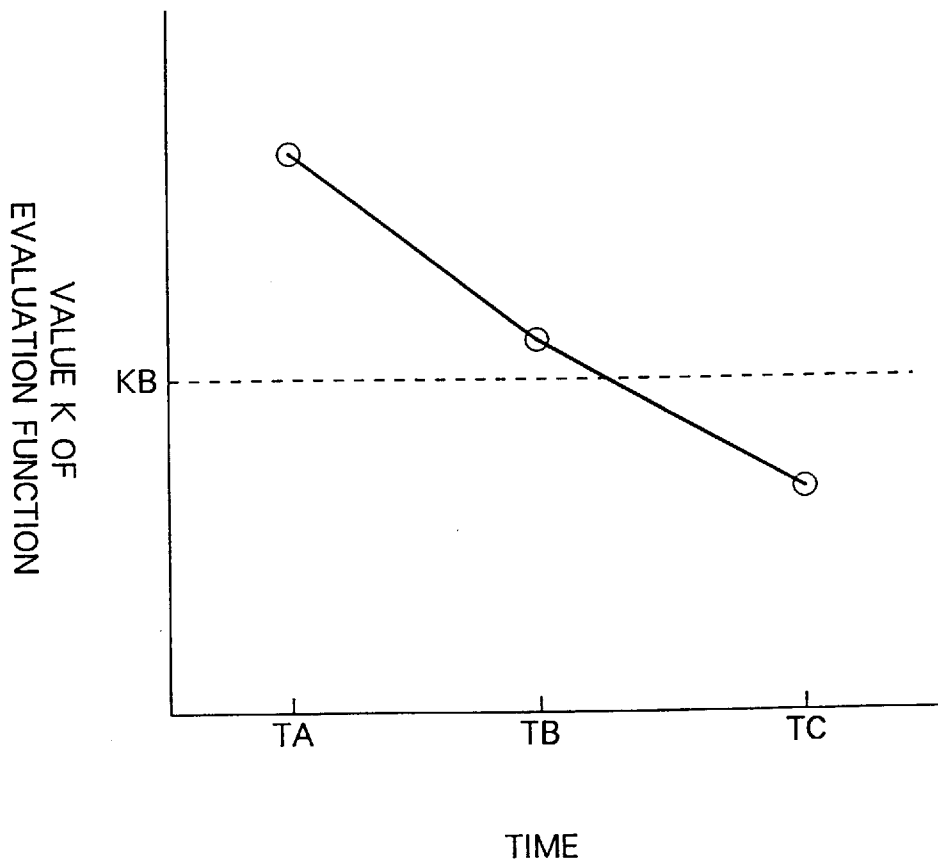
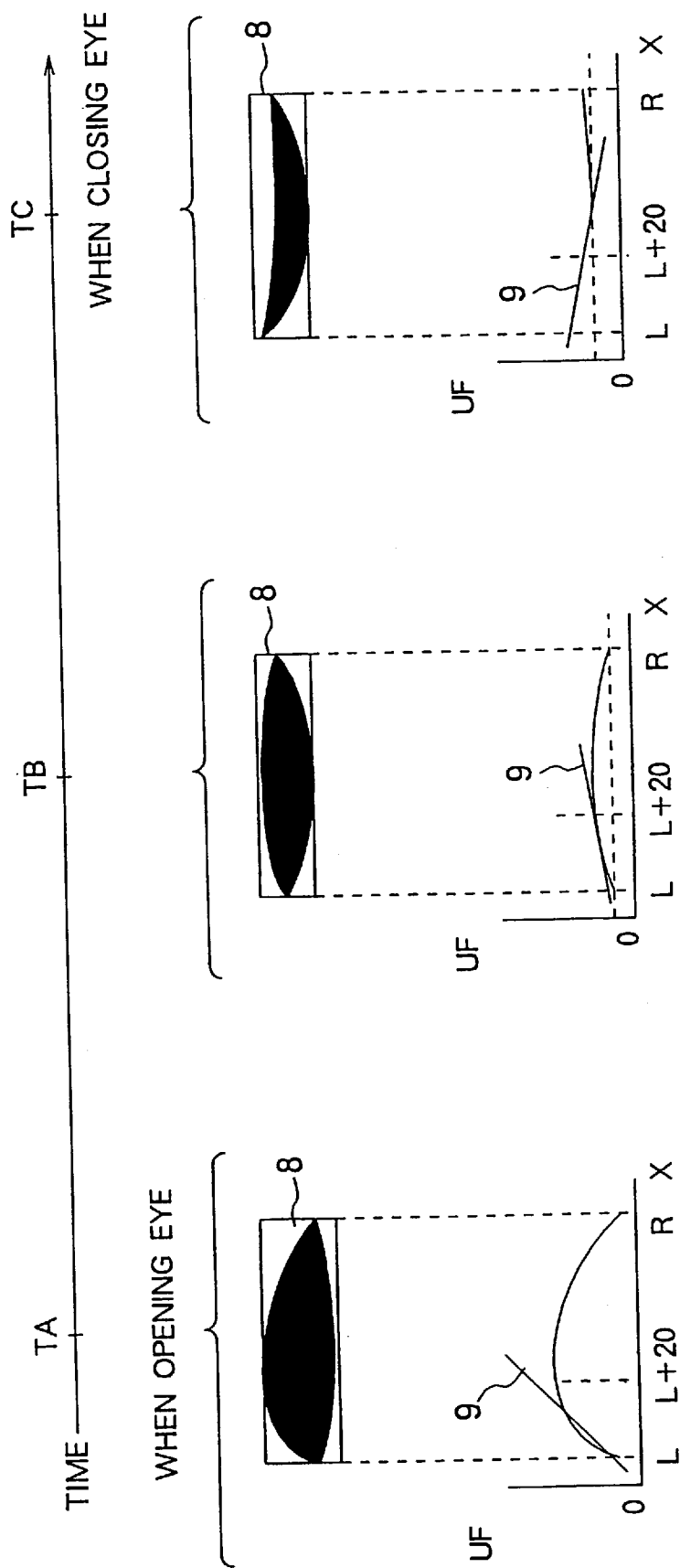


FIG. 4



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