Hough Transform block: This block takes the edge representation matrix and applies the Hough Transform algorithm to find the lines in the matrix. The Hough Transform algorithm can be implemented using CORDIC-based algorithms for trigonometric functions and multiplication.

Accumulator matrix block: This block stores the accumulator matrix generated by the Hough Transform block. The accumulator matrix can be implemented using a RAM block.

Maximum finder block: This block takes the accumulator matrix and finds the two longest lines in the matrix. The maximum finder algorithm can be implemented using CORDIC-based algorithms for comparison.

Input/output block: This block handles the input and output of the Hough Transform algorithm. It loads the edge representation matrix and outputs the r and angle of the two longest lines.