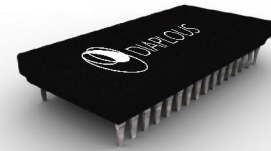


DIAPLOUS

COMPONENTS FOR VISUAL PERCEPTION

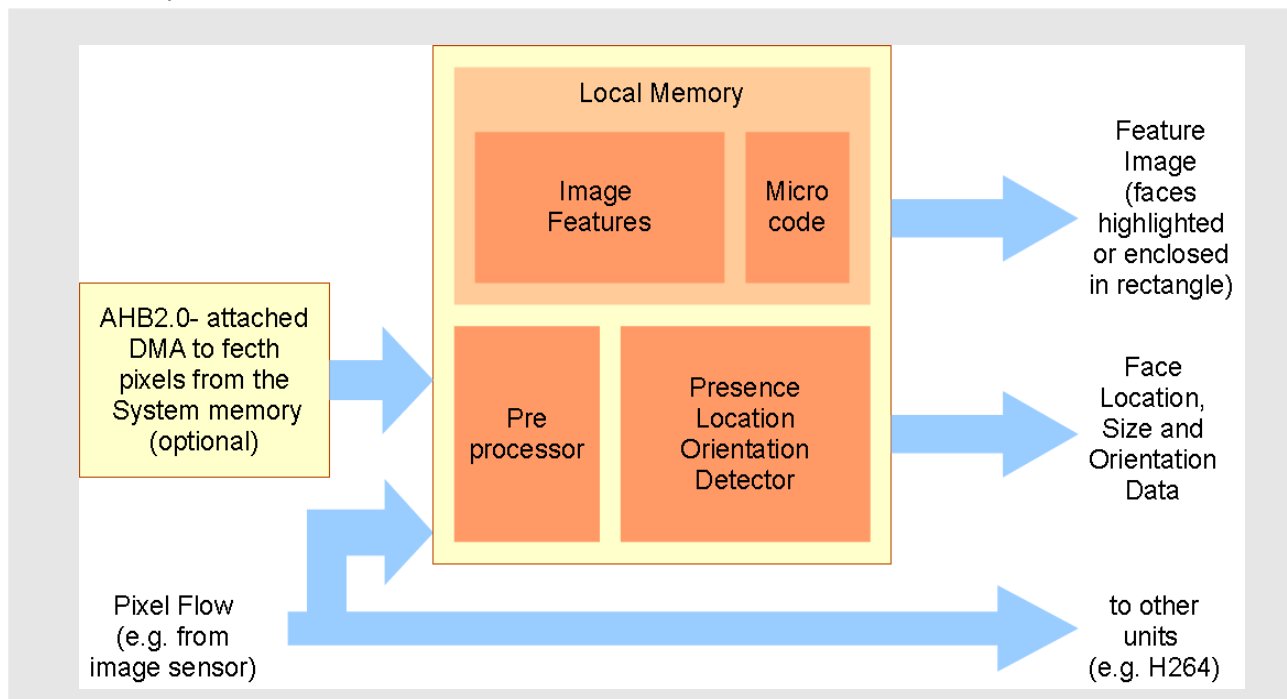


Face Detection Unit

Product Outline

An IP block that detects faces or similar structures in images or video streams

The DIAPLOUS Face Detection Unit is a flexible IP core that reads an entire frame out of a flow of pixel data in RGB format and detects the presence, location and orientation of human faces. The Face Detection Unit can be connected through a shared bus to a system memory or can work in parallel to the normal pixel flow in a camera system.



Input: The unit expects that the frame will be provided to it as a flow of RGB pixels, as they come out of an image sensor. If the frame is available on a system memory, there is an option to use a DMA device which generates a compatible pixel flow by accessing the memory through an AHB bus.

Preprocessor: The preprocessor is responsible for two tasks: (a) it modifies the input so that it is neutralized in terms of chroma, luminance and texture and (b) extracts features from the image that are used by the detector.

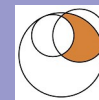
Local Memory: A small local RAM is required to store the image features. If we want to annotate the pixel flow with these features a direct output port is provided. The same memory also holds the control flow of the detection algorithms (microcode).

Detector: The detector can be configured to analyze the image features and extract the following types of information:

Presence: Depending on configurable sensitivity settings the system can report the number of faces.

Location and Size: For each face, a location vector and a size attribute are generated.

Orientation: For each face the Z-axis orientation angle is provided and the other two axis (X,Y) are estimated. Application configurable settings can limit the range of acceptable angles.



Features:

- Integrated solution with no need for external processor to run part of the algorithms
- Configurable parameters
 - Sensitivity
 - Acceptable Angles and Sizes
 - Output Format
 - Input Resolution and Frame Rate
- Can detect multiple faces in a frame
- Easy integration

Speed: 30faces/sec
(typical / depends on implementation technology)

Interfaces:

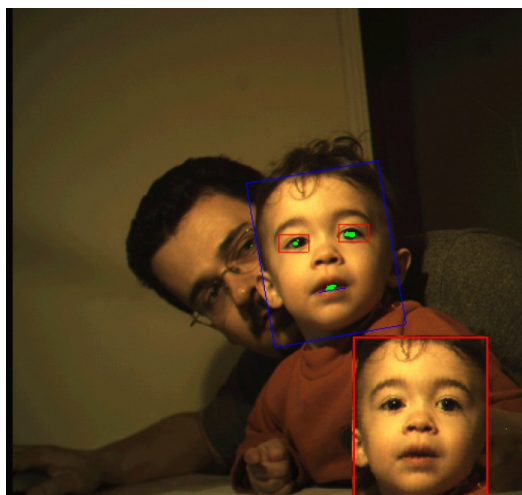
- Interfaces to Pixel Data
 - Pixel-flow Input/Output
 - AHB bus Master
- Status/Control Registers
- Detection Data Port

Target Applications:

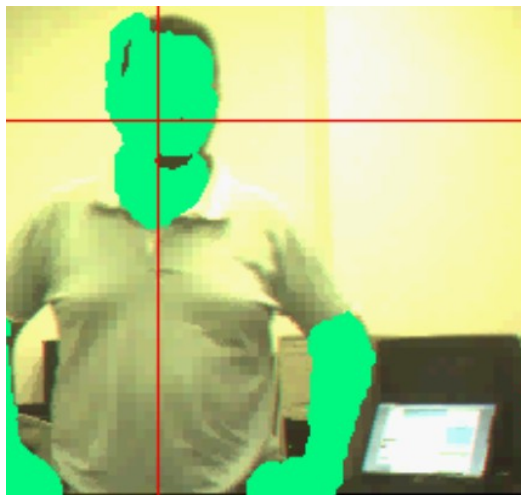
- Embedded Cameras
- Access control
- Interactive Interfaces

Status:

Working FPGA Implementation



Location and Orientation



Detection of Face Presence

More info:



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