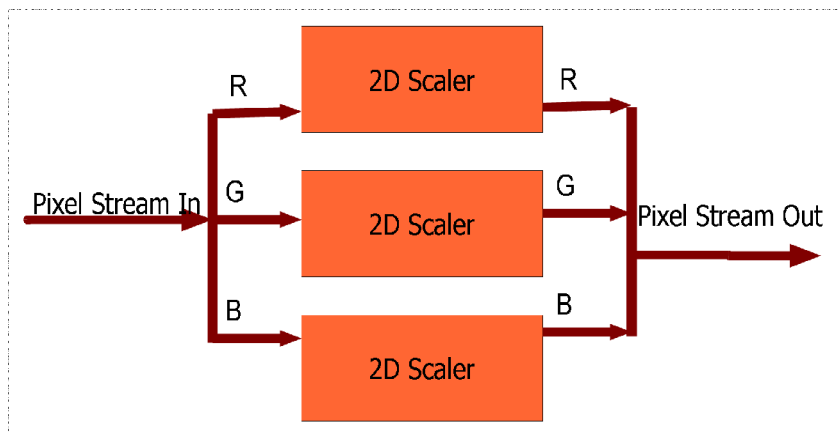


2D Image Scaler

Product Outline

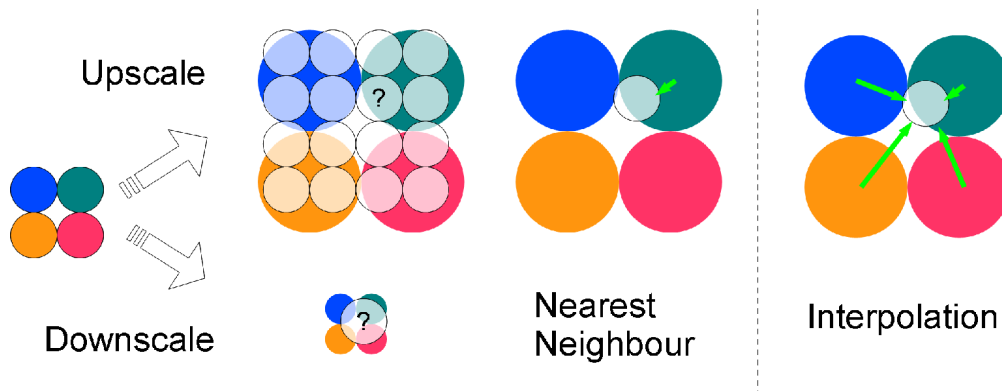
An IP block for scaling 2D images

The DIAPLOUS 2D Image Scaler block provides scaling of images to different zoom levels. The block can do up or down scaling using simple pixel-copy or interpolation.

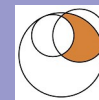


Pixel Stream: Each Scaler unit expects a stream of single-value pixels. In order to scale a complete RGB signal three scalers must be used. This allows the scaler to be applied for various pixel formats including RGB, YUV444, YUV422 etc. The streams are synchronized to "frame valid" and "data valid" inputs. An equivalent stream is generated as the output of each unit (including "frame valid" and "data valid" signals).

2D Scaler: The Scaler generates pixels of an output frame by reading the pixels from the input frame. It can operate as an up-scaler or a down-scaler depending on the horizontal and vertical zoom parameters. Two methods for scaling are possible: simple nearest neighbor or interpolation-based. The following illustration shows the operating principle of the scaler:



Core Configuration: The code can be configured for various pixel sizes. There is also the capability to generate special scalers with fixed zoom-factors tailored to specific standards.



Features:

- Up and Down Scaling of 2D Images
- Nearest Neighbor or Interpolation-based
- Can be used with various pixel formats and color spaces
- Automatic aspect-ratio adaptation (optional)
- Easy integration in various pixel flow architectures.

Target Applications:

- Image sensor interfacing
- Display drivers

Size: 600 LEs, 300 FFs (Altera Cyclone III) *

Speed: Pixel Clock 175MHz.

Interfaces:

- Pixel-flow Input and Output
- Status/Control Registers

Status:

Working FPGA Implementation.

Demonstration:

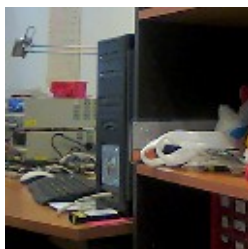
Development board including:

- FPGA with RISC Core, Ethernet 10/100 MAC, Sensor Interface, I2C, Memory Interface
- Memories (SDRAM & Flash)
- Ethernet Phy & Connector
- 3Mpixel Color Image Sensor

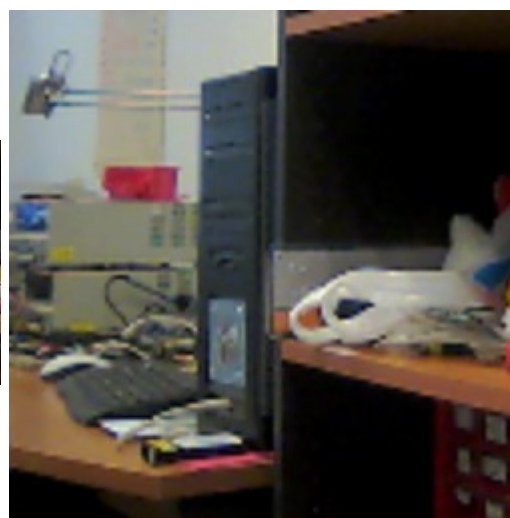
Nearest Neighbor



Initial



Interpolation



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* Size and Fmax Numbers are preliminary and subject to change