

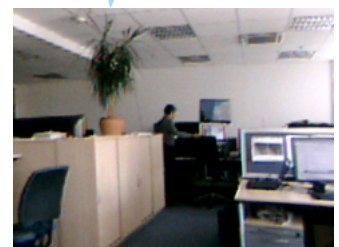
## IV-Rect Image Rectification

### Features:

- RGB/YCC input
- Output Resolution up to 2048x2048
- Input Resolution unlimited
- Radial & tangential distortion correction
- Perspective Transformation
- Rotation, Cropping, Zoom

### Applications:

- Stereo Camera Calibration
  - 3D Display
  - 3D Video Processing
- Wide-Angle Lense
  - Distortion Correction
  - Detail Zoom/Cropping for Mpix Sensors



### Applications



## Overview:

The IV-Rect IP implements picture rectification for high resolution images like HD (1280x720p60 or 1920x1080p30). The maximum resolution is 2048x2048.

The throughput of the design is 1 pixel per cycle on 3 components 8bit each (e.g. RGB or YUV444). The rectification process requires 1 frame delay through external SDRAM/DDR. The picture content can be interlaced or progressive video.

De-interlacing is recommended (iv-deint) to guarantee best results.

Programmable parameters are:

- input picture size
- output picture size
- number of video components
- distortion coefficients
- rotation matrix
- translation matrix
- camera matrix

Program parameter changes are applied during vertical blanking. The algorithm requires 1 full frame storage. Processed pixel are directly displayed.

The design is written in verilog and easily portable to either FPGA or ASIC. It uses generic system interfaces for programming and DMA channels which can be easily adapted to any interface standard.

Note: The IP comes with a Calibration SW to generate programming values with the use of a planar chess board pattern.

