

# Image Operations

# Dataflow Computing



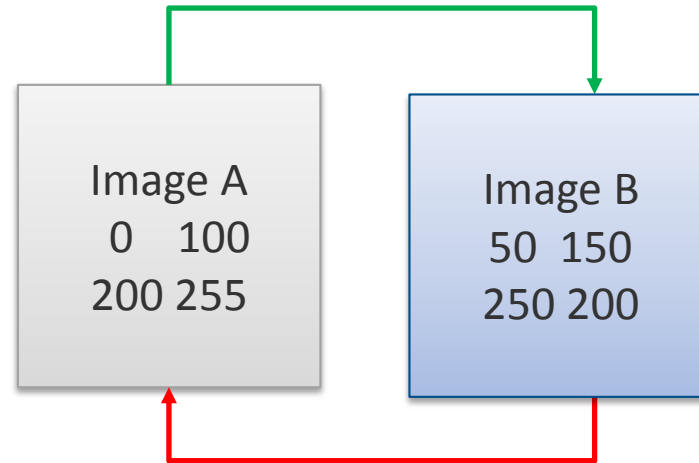
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# Outline

- Design
- Code View
- Graph View
- Discussion

# Design

- A program takes two arrays of pixels
- Calculation is done by:
  - Addition [50,250,255,255]
  - Subtraction [0,0,0,55]



# CPU Code View

```
add_image_array(the_image, out_image, rows, cols, max)
int rows, cols;
short **the_image, **out_image, max;
{ int i, j;
```

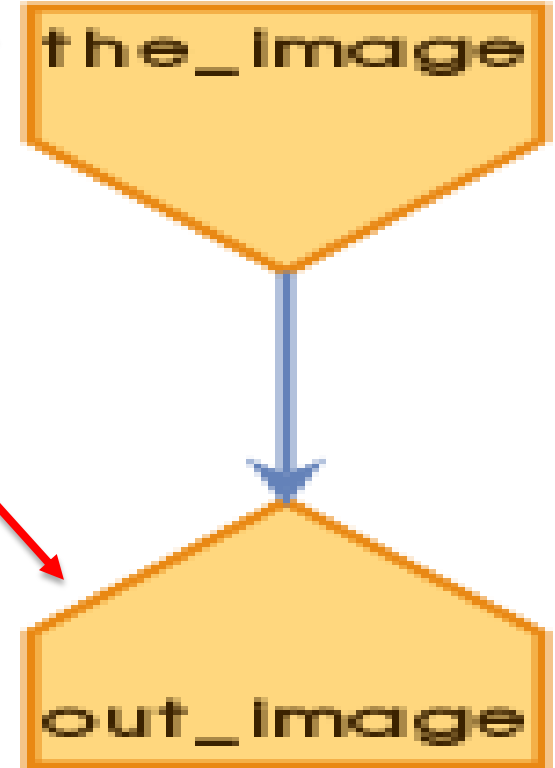
Compute image addition per row and columns on an array and use the max value to compare with sums

```
for(i=0; i<rows; i++){
    for(j=0; j<cols; j++){
        out_image[i][j] = the_image[i][j] + out_image[i][j];
        if(out_image[i][j] > max)
            out_image[i][j] = max;
    }
}
```

Computation process in this loop accelerate with DFE kernel

# Kernel View

```
DFEVar the_image = io.input("the_image", dfeInt(32));  
io.output("out_image", the_image, the_image.getType());
```



# Discussion

computational image processing techniques do not offer a significant performance advantage when dealing with illumination brighter than typical daylight on images