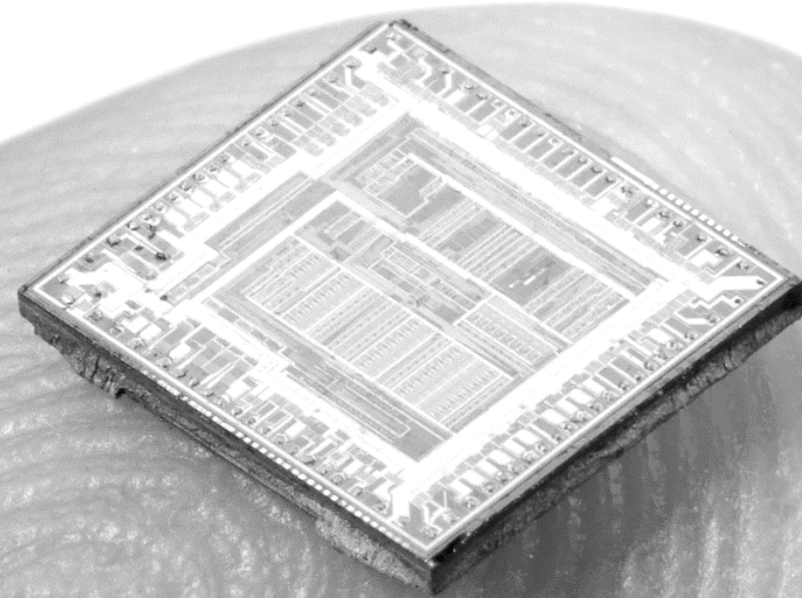




Politecnico
di Torino

Stereo Vision accelerator based on Census Transform

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Josie Esteban Rodriguez,
Matteo Sonza Reorda*



Stereo Matching concept



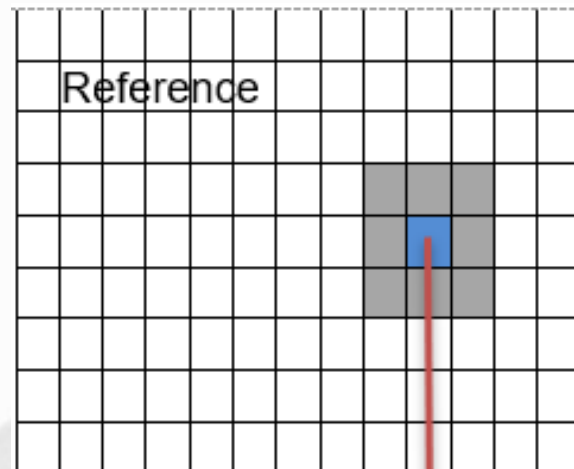
(a) Left Image



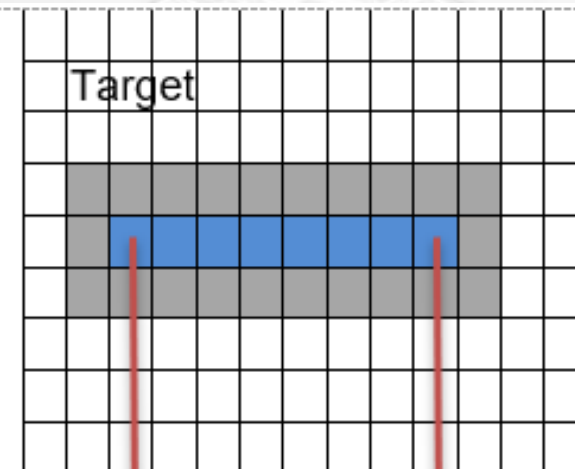
(b) Right Image



(c) Disparity Map



X

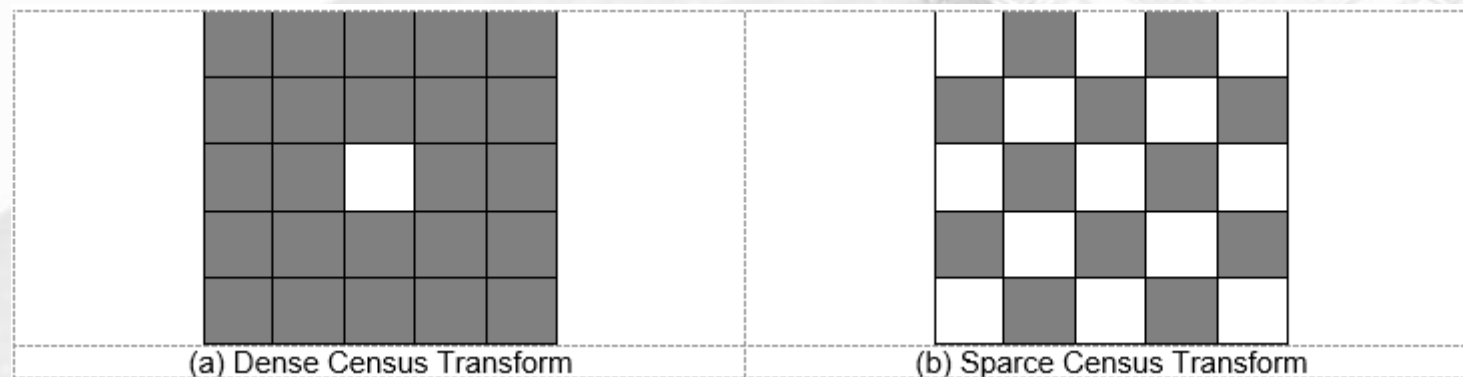
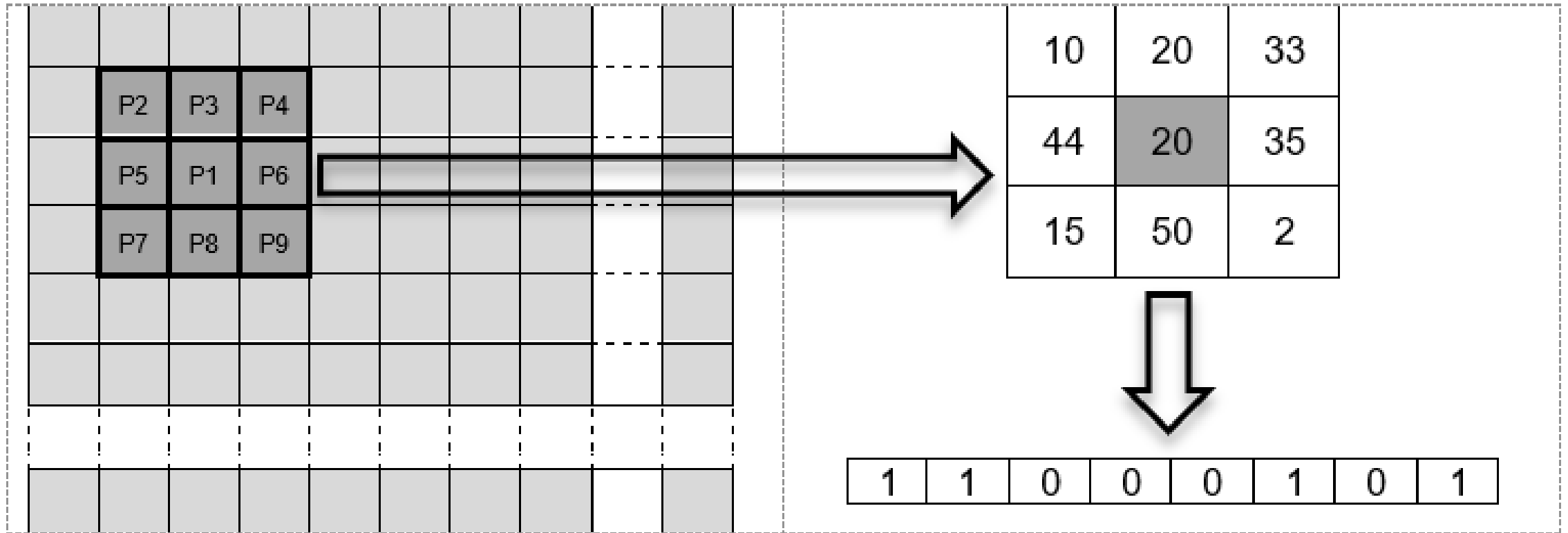


$X - d_{max}$

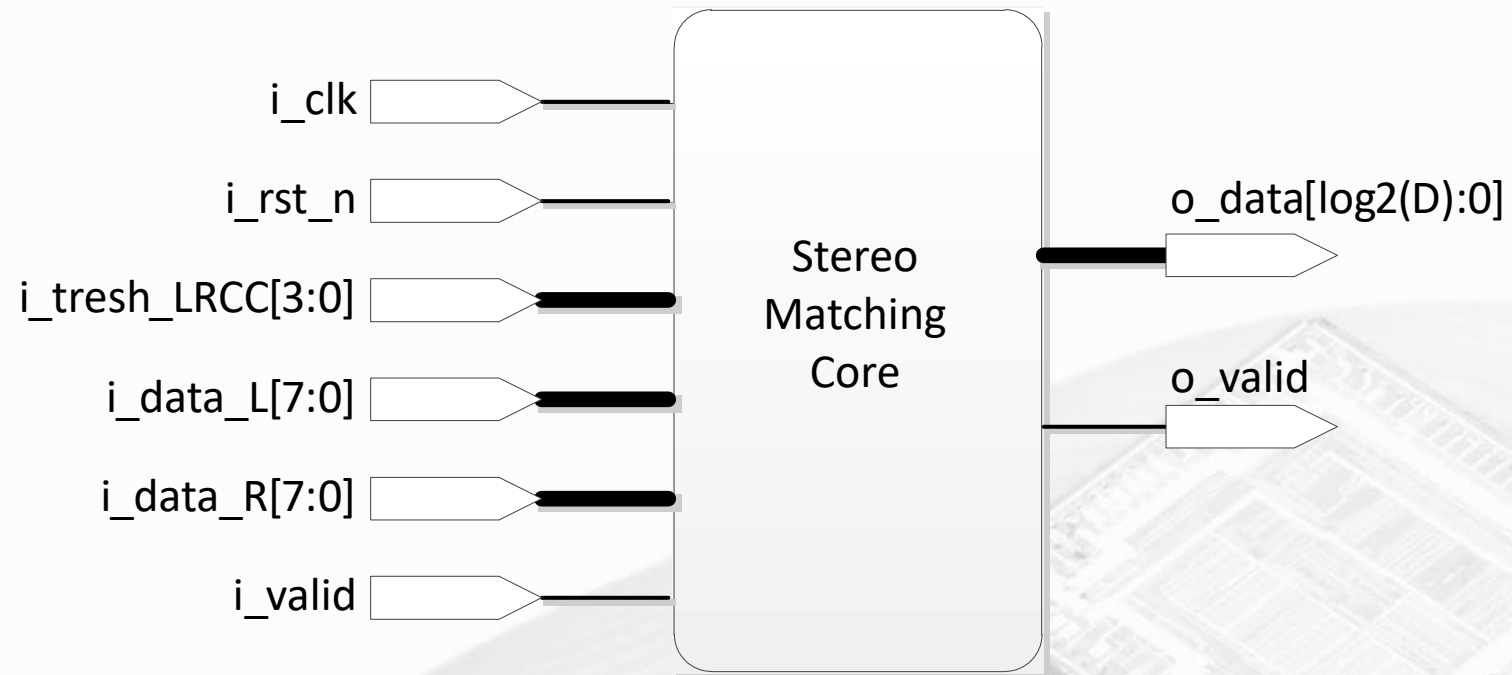
X

d

Census Transform Concept

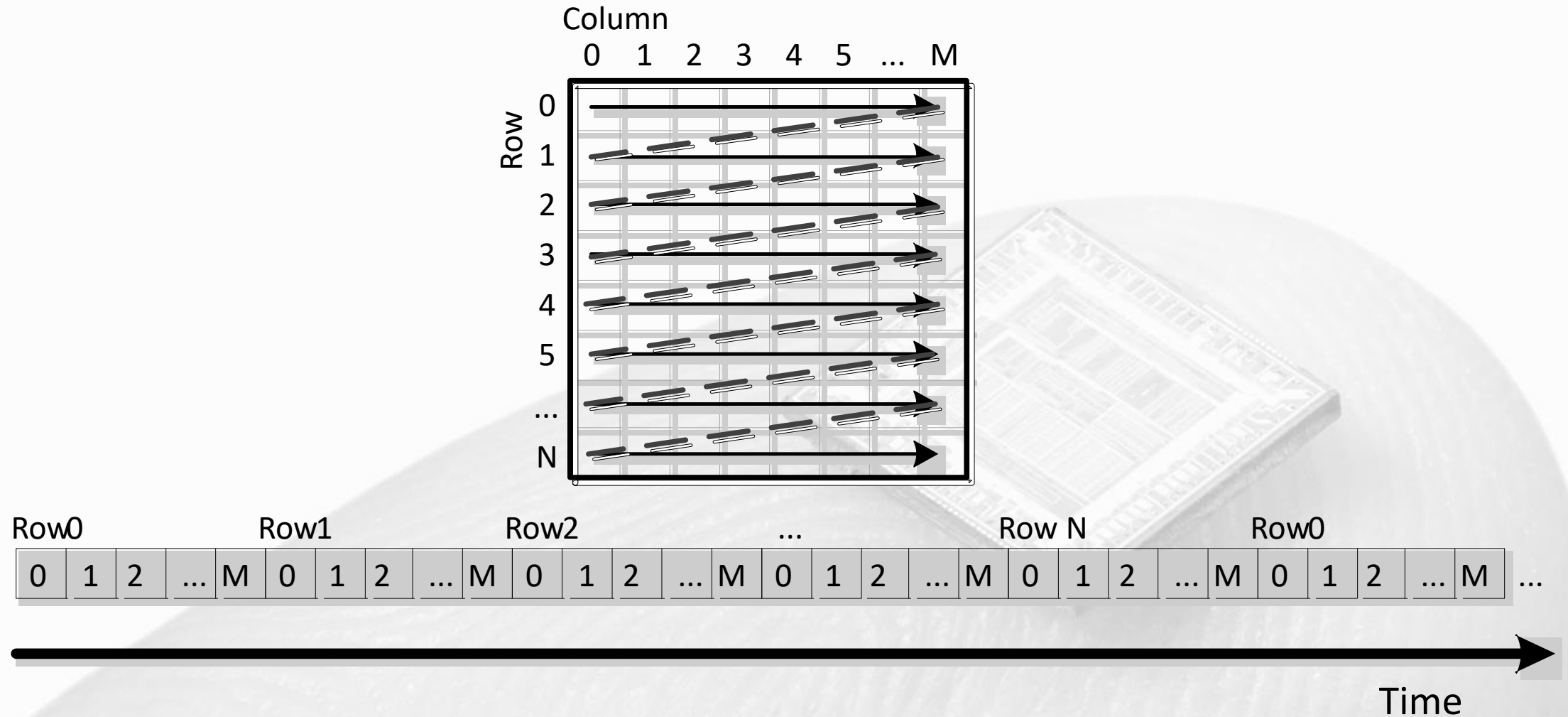


Stereo vision accelerator architecture

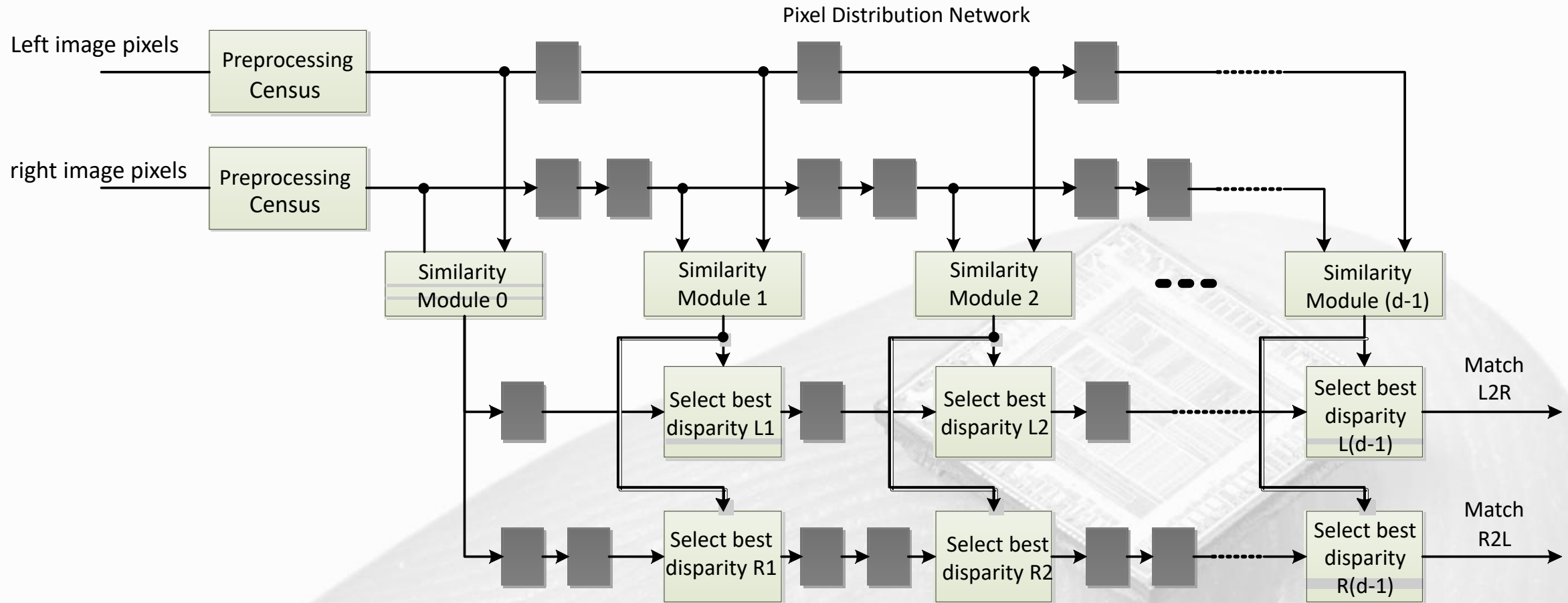


Stereo vision accelerator architecture

Stream Processing concept

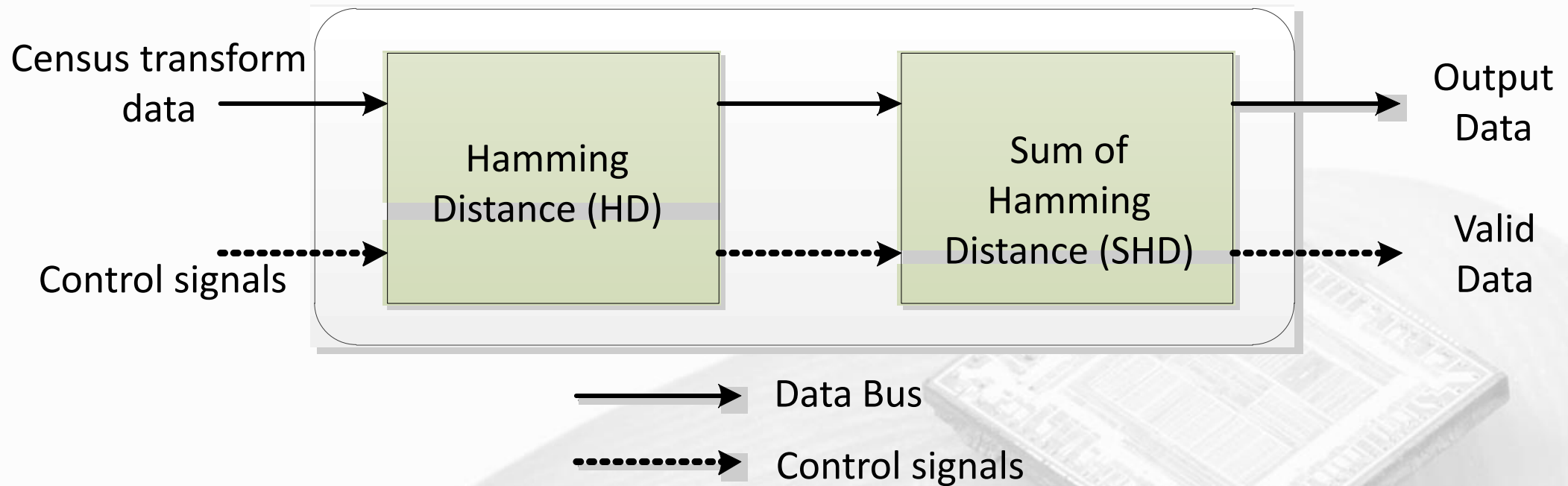


Disparity map accelerator architecture



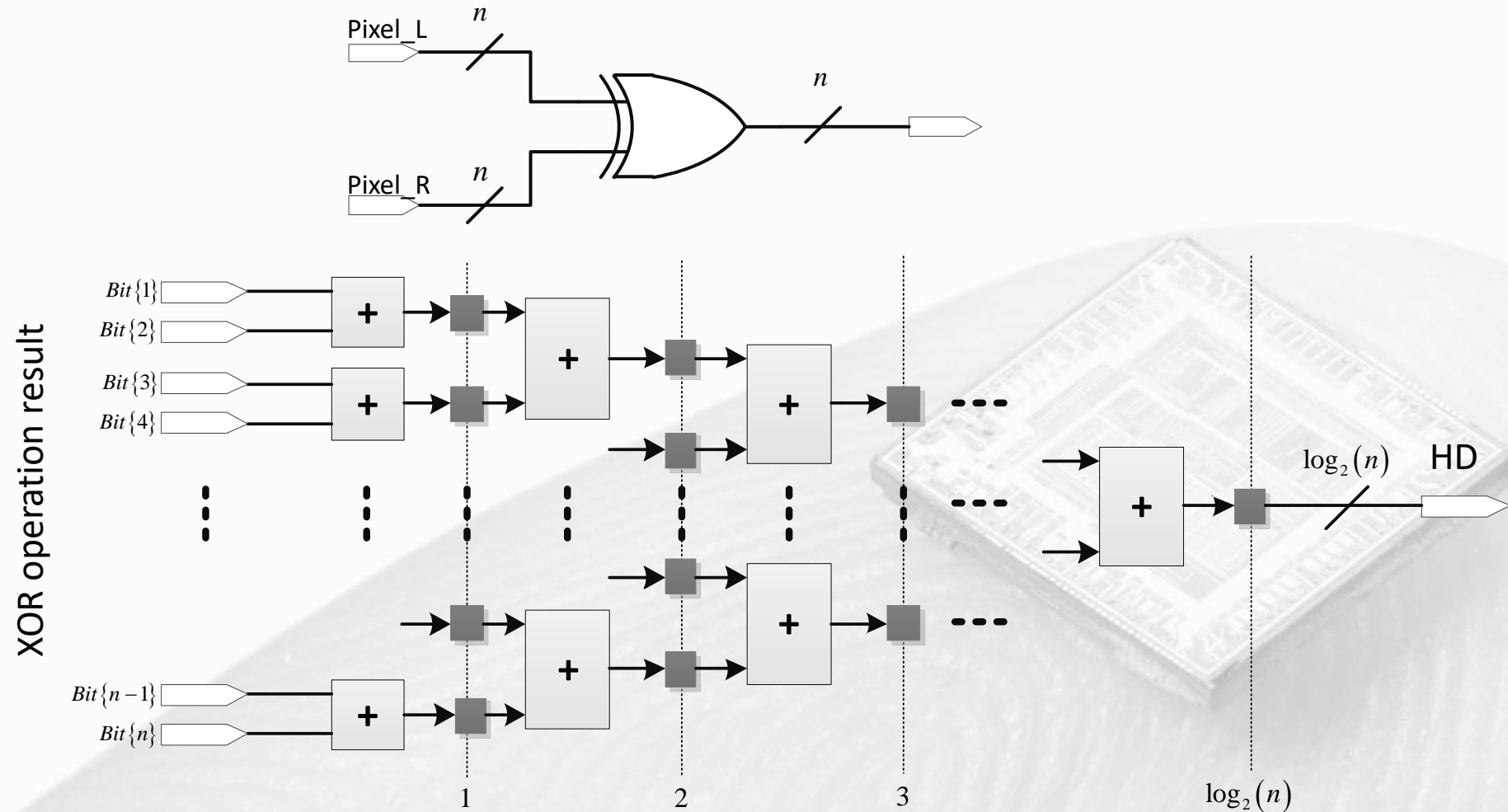
Disparity map accelerator architecture

Similarity Module Architecture



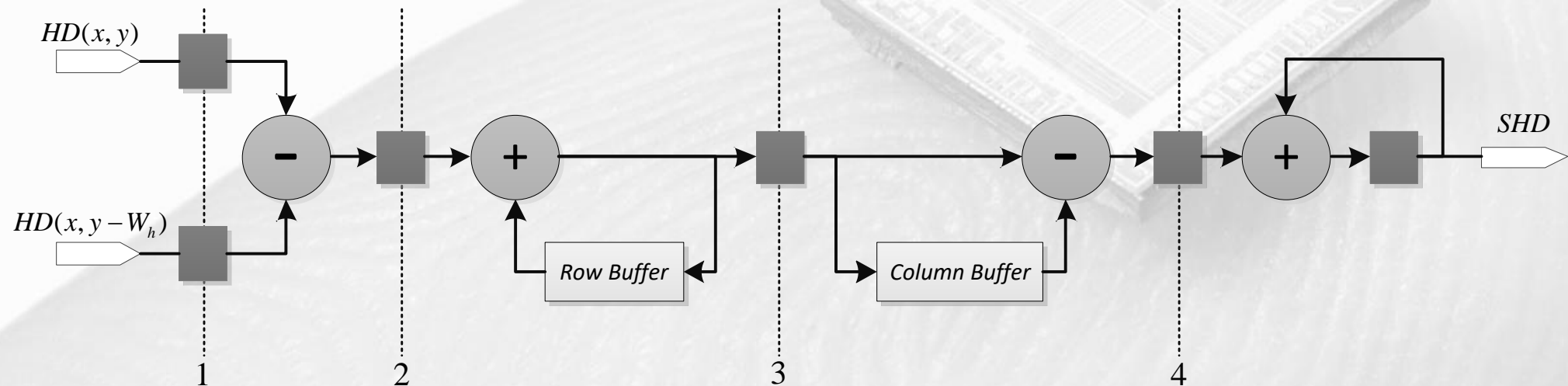
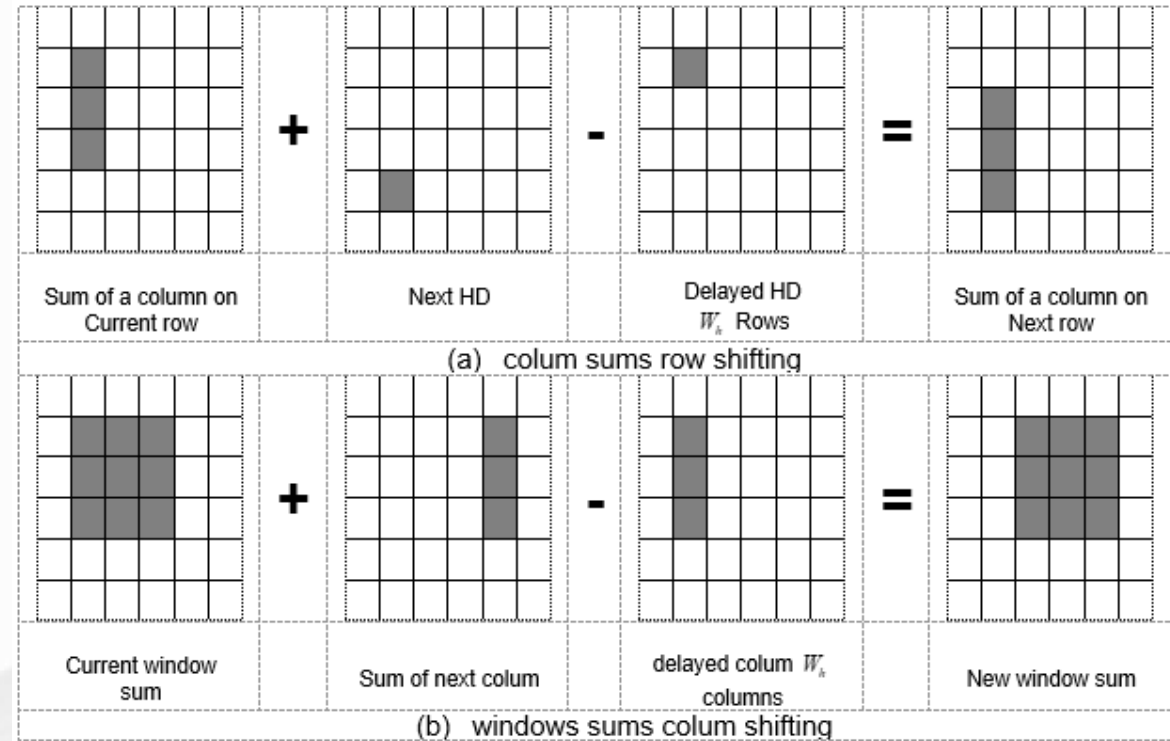
Disparity map accelerator architecture

Similarity Module Architecture (HD)



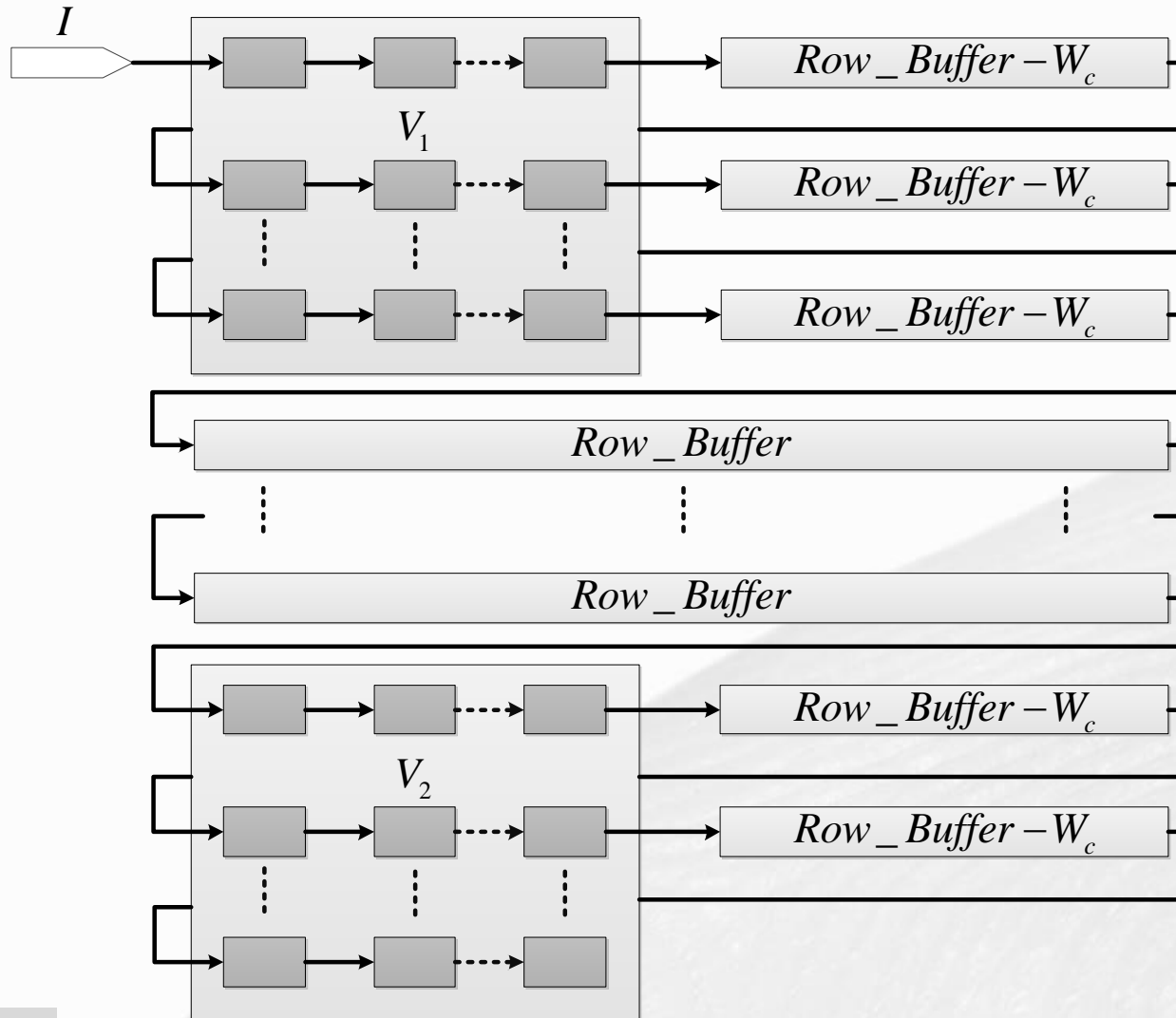
Disparity map accelerator architecture

Similarity Module Architecture (SHD)

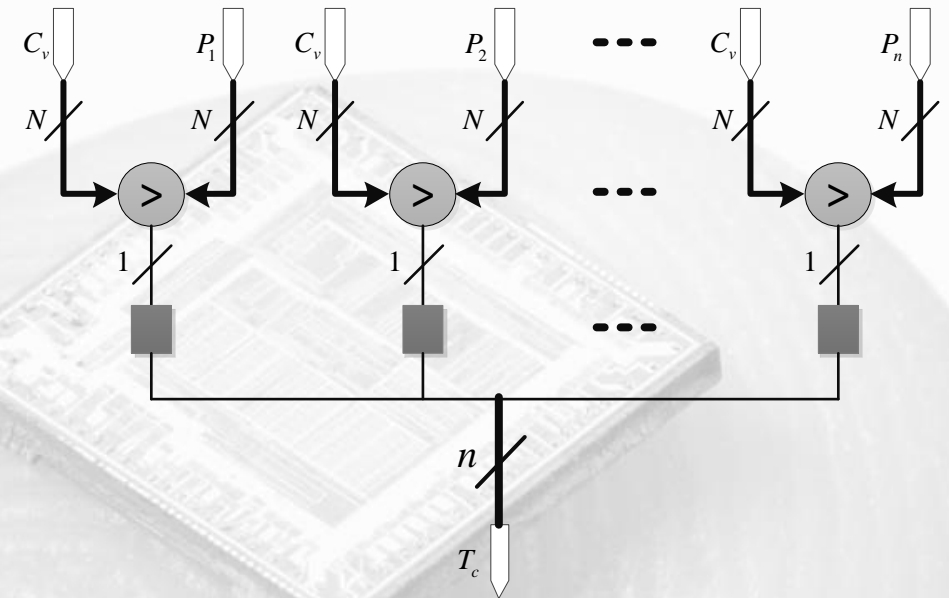


Disparity map accelerator architecture

Census transform architecture (window generator)

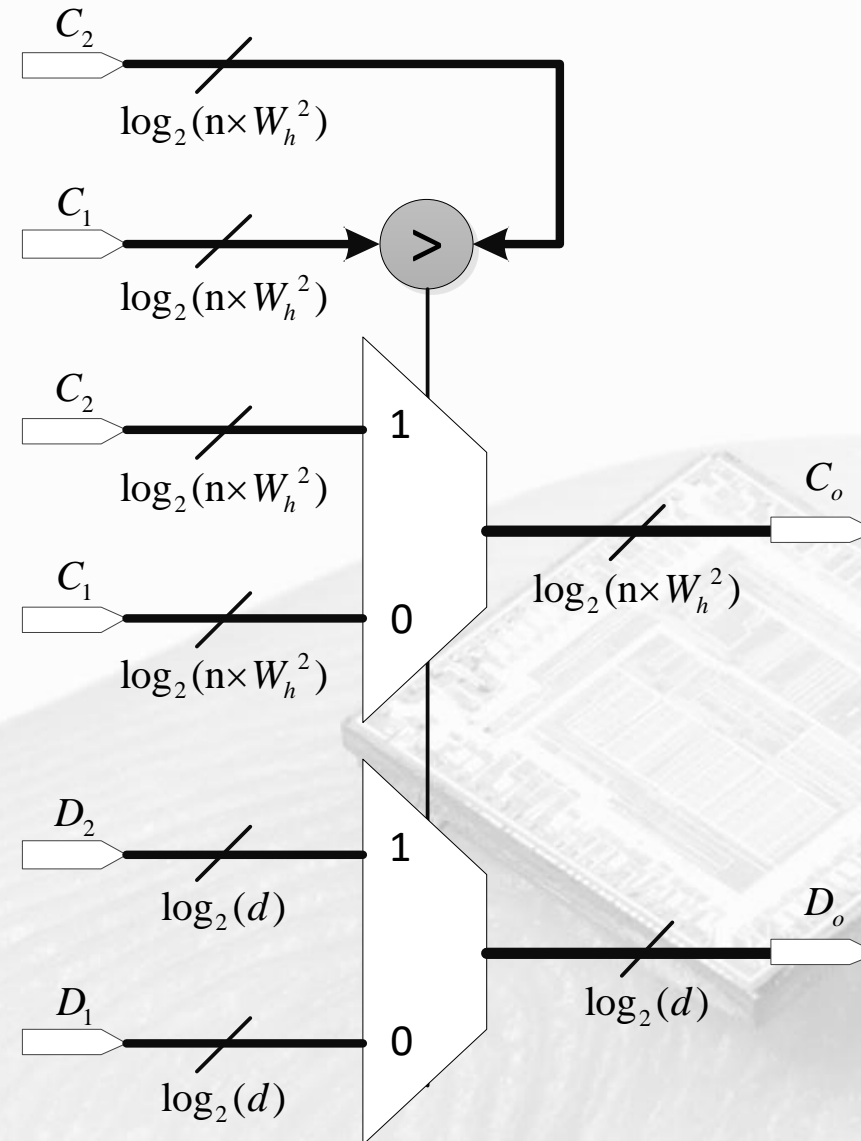


Sparse Census transform bitstream



Disparity map accelerator architecture

Best Disparity Selector Component



Disparity map accelerator architecture

Left-Right Consistency Check module

