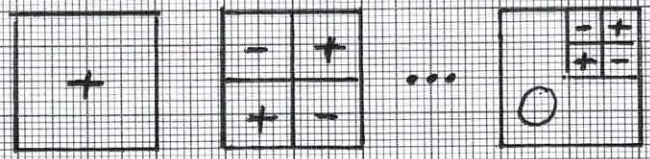
Stratovan

■ HAAR WAVELETS - Cont'd.

→ Basis functions – Templates / Masks – Hierarchy – Convolutional neural network (CNN)

• IDEA: For example, use 16 (tensor product) piecewise constant bivariate Haar basis functions as convolution filters.



F_0 ... F_{15}

increasing detail →

"Hierarchy" built into functions $F_{0,\ldots,}F_{15}$.

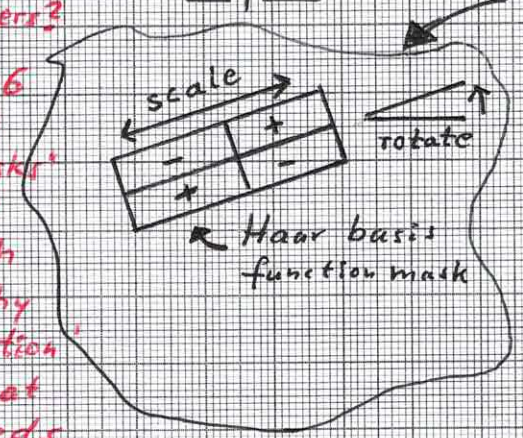
• Issues:

→ Use only one size, aspect ratio, & orientation for mask?

→ Or: Use multiple values for these parameters?

→ Do the 16 (or more) 'Haar masks' capture so much 'hierarchy information' such that one needs less CNN layers?

Applying these hierarchical basis function masks in ONE layer of a CNN generates a basis function-based hierarchy for that one layer.



Move basis function masks over the image segment. Ideally (?) masks should be 'optimally scaled and oriented'; alternatively, one could apply a 'set of scaled and rotated masks' locally.

→ CONSTRUCT HISTOGRAMS FOR RESPONSES OF MASKS WHEN CONVOLVED WITH SEGMENT.

BH