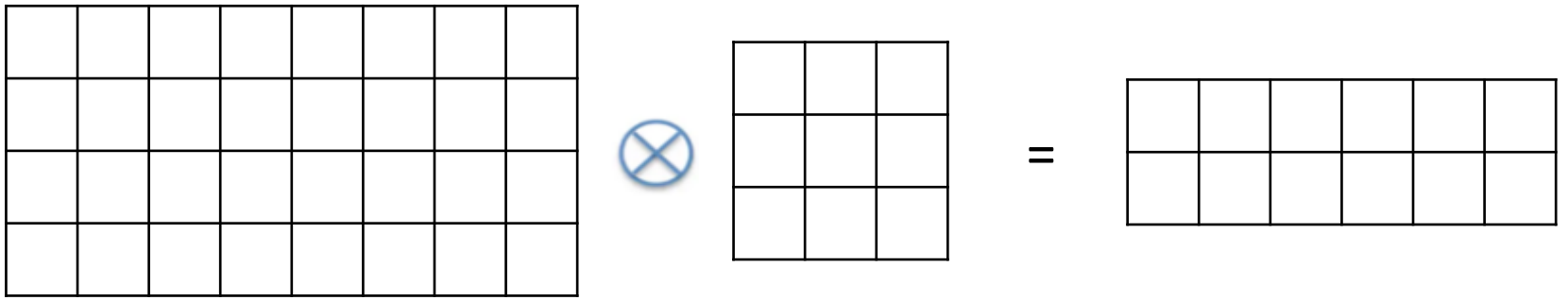
Research of AI accelerator

Con2d Transformation



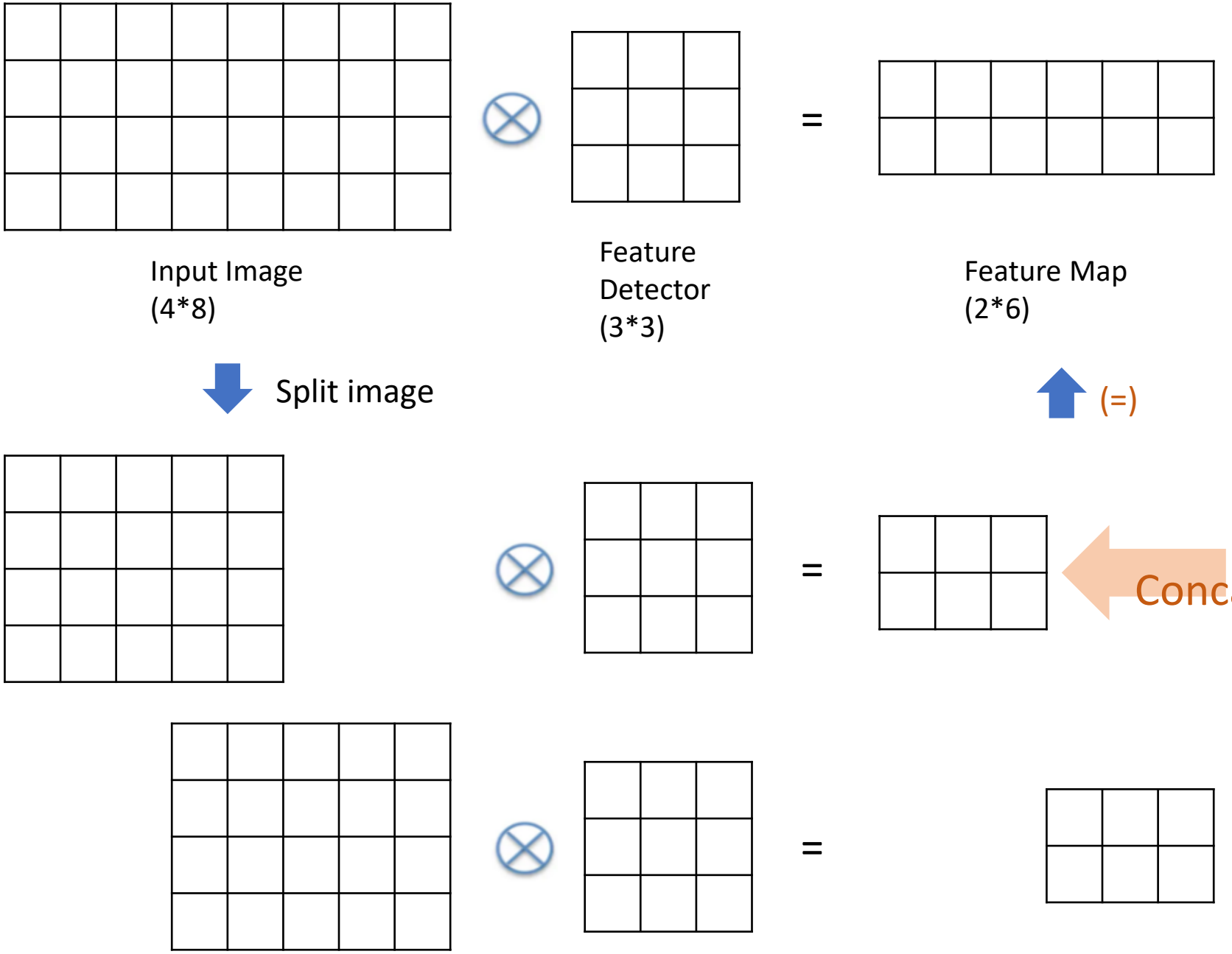
Input Image
(4*8)

Feature
Detector
(3*3)

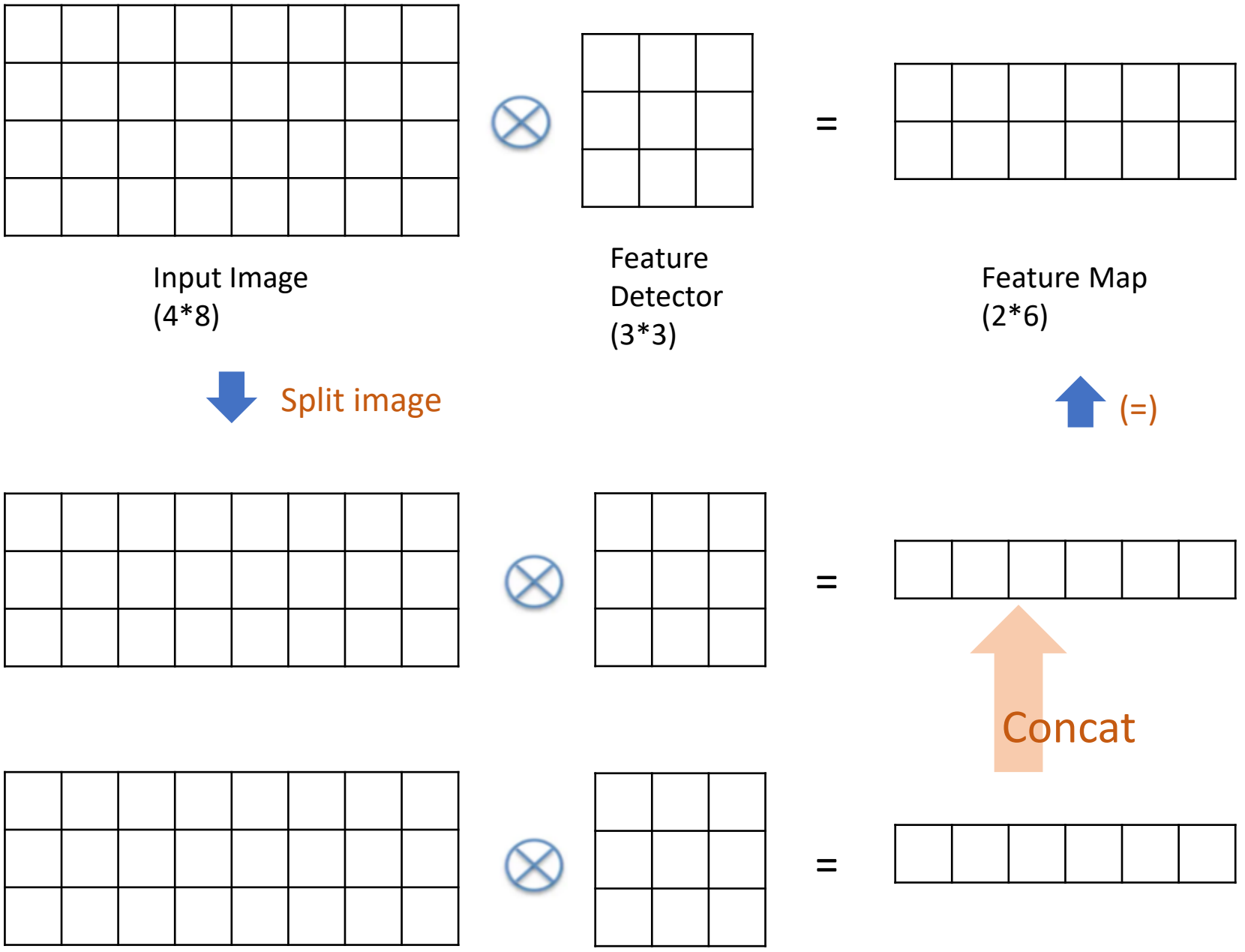
Feature Map
(2*6)

To split input image to fit hardware constraints

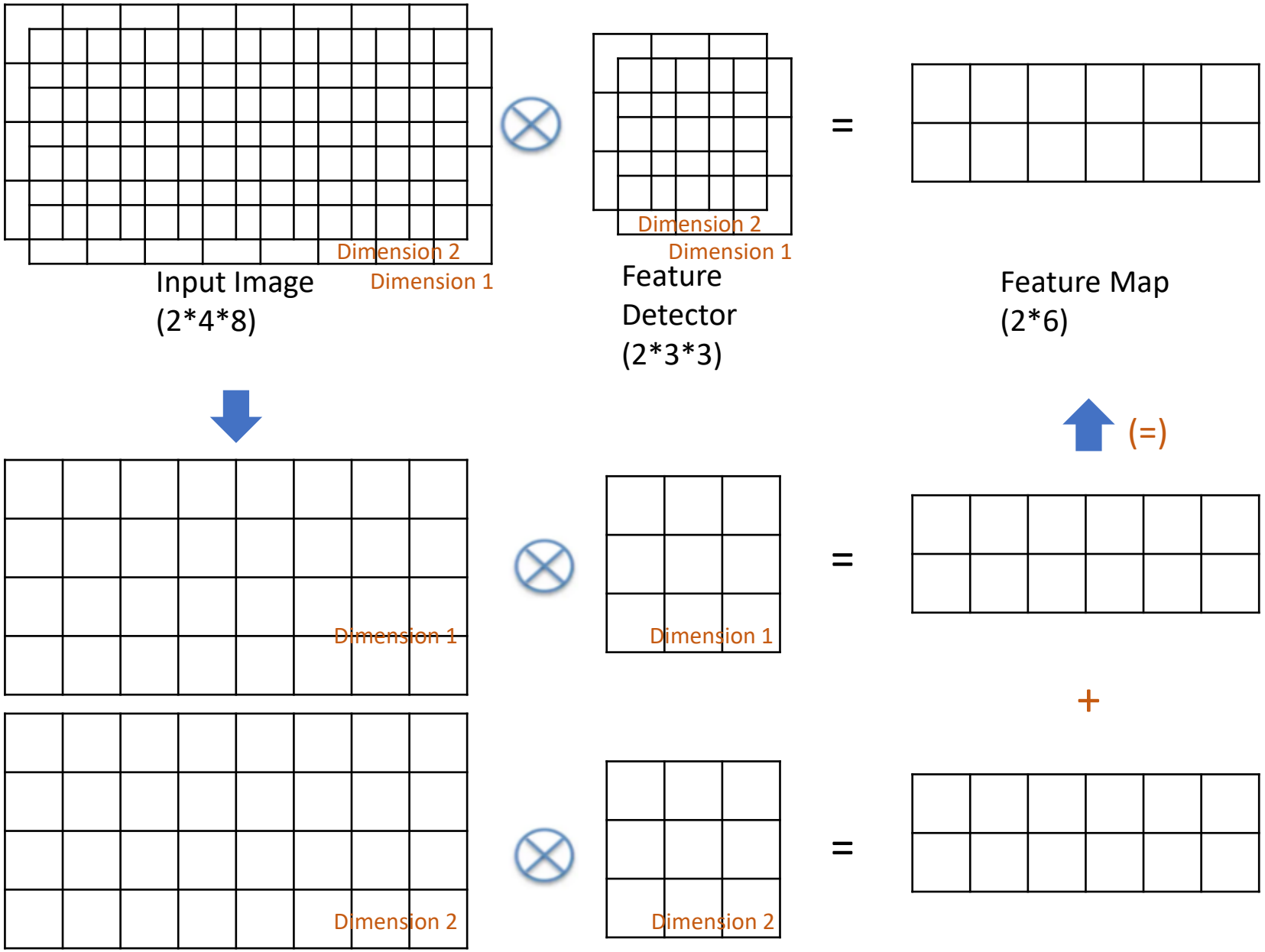
1.
Along input width dimension


Input Image
(4*8)
Feature
Detector
(3*3)
Feature Map
(2*6)
Split image
(=)
Concat

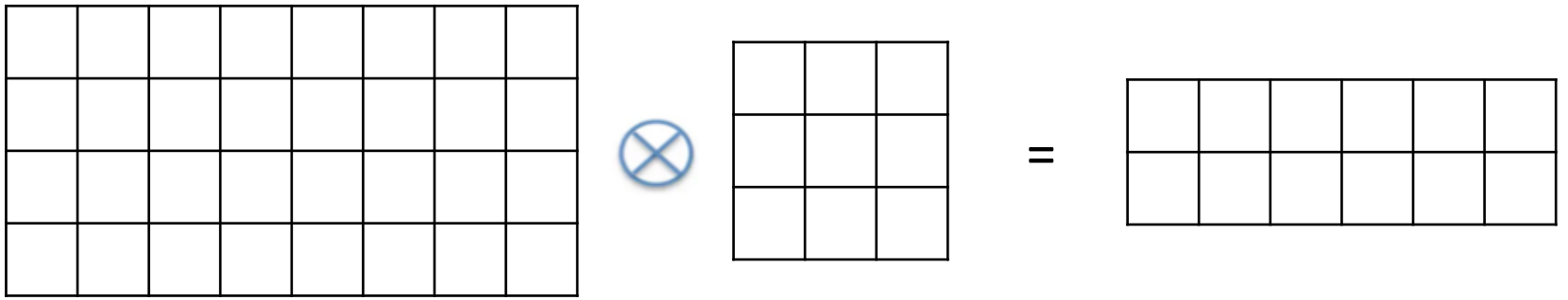
2.
Along input height dimension


Input Image
(4*8)
Feature
Detector
(3*3)
Feature Map
(2*6)
Split image
(=)
Concat

3.
Along input channel dimension


Dimension 2
Dimension 1
Input Image
(2*4*8)
Dimension 2
Dimension 1
Feature
Detector
(2*3*3)
Feature Map
(2*6)
(=)
Dimension 1
Dimension 1
Dimension 2
Dimension 2
+

Appendix



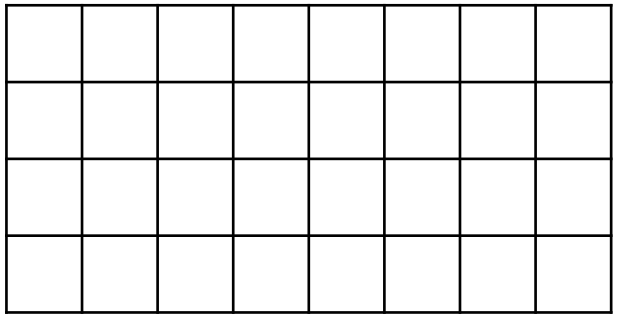
Input Image
(4*8)

Feature
Detector
(3*3)

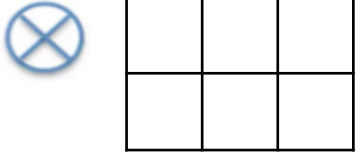
Feature Map
(2*6)

Split input image with weight

To split input image to fit hardware resource constraints

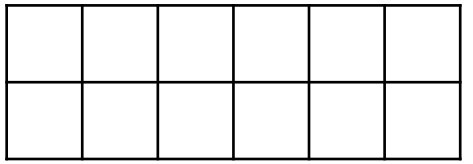


Input Image
(4*8)



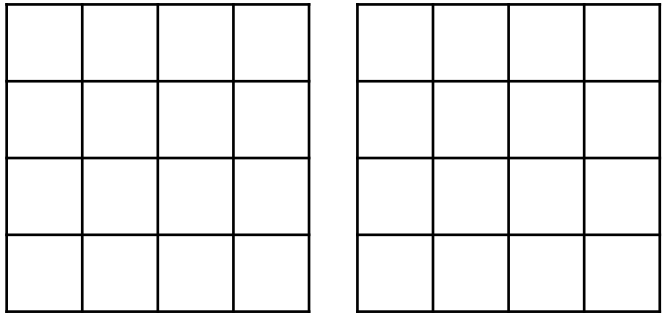
Feature
Detector
(3*3)

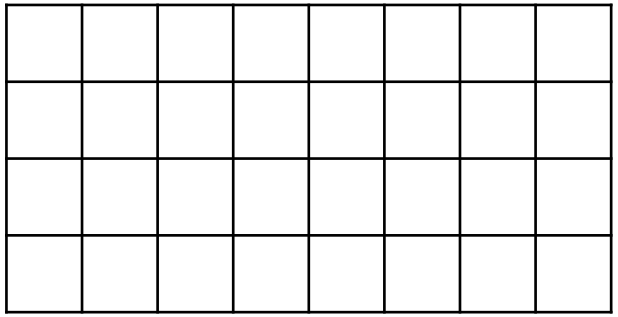
=



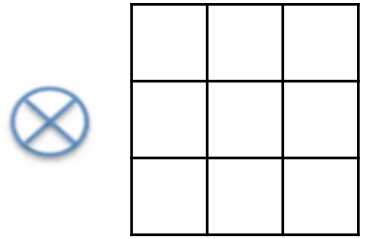
Feature Map
(2*6)

Split image



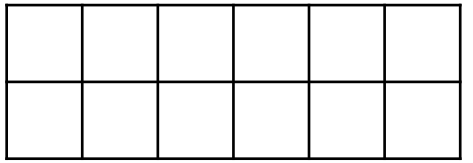


Input Image
(4*8)



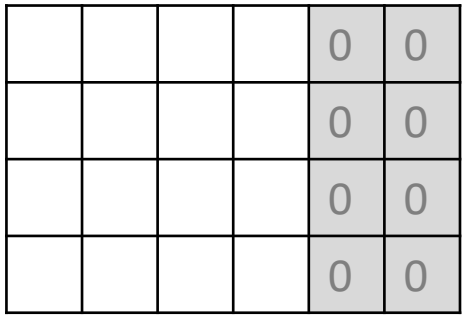
Feature
Detector
(3*3)

=

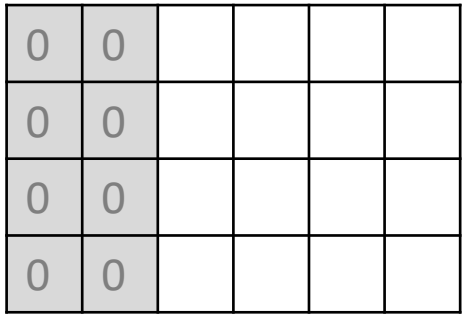


Feature Map
(2*6)

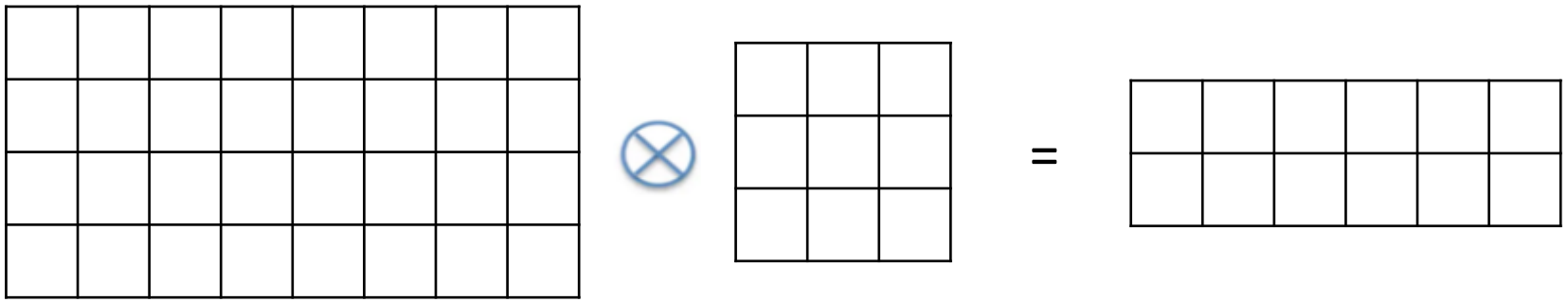
Split image



Zero padding



Zero padding

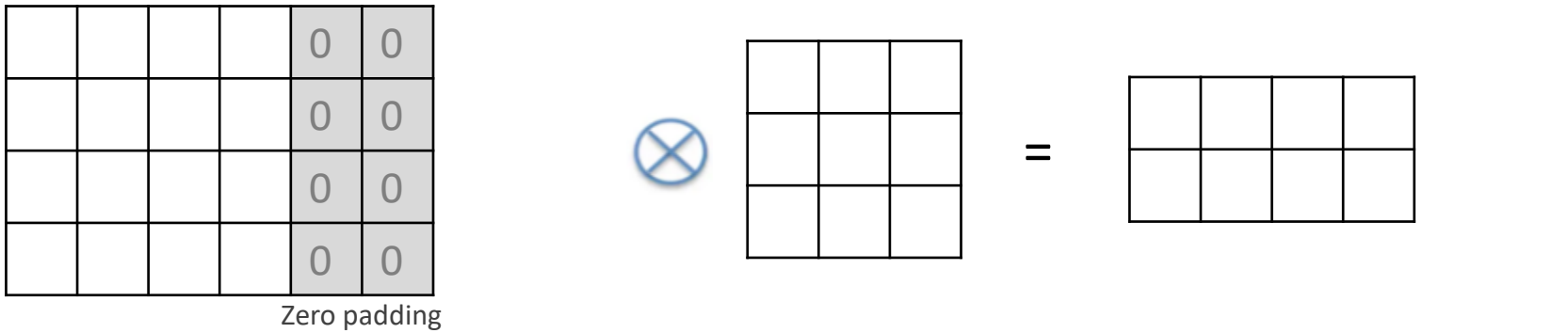


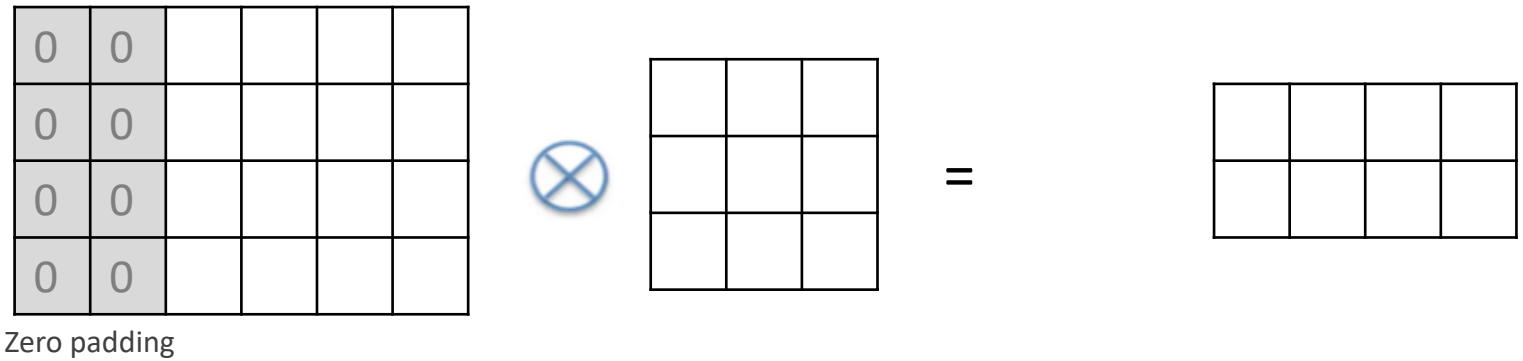
Input Image
(4*8)

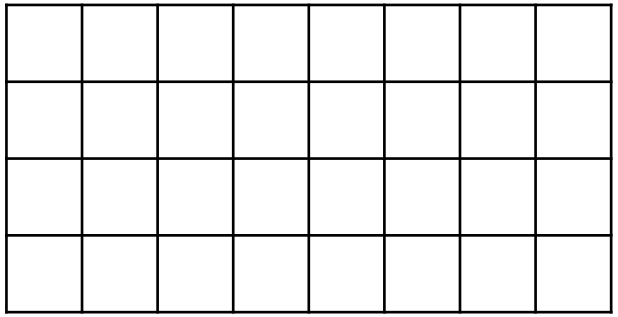
Feature
Detector
(3*3)

Feature Map
(2*6)

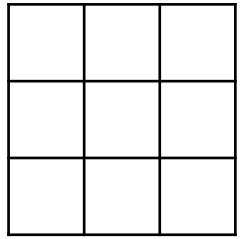
Split image





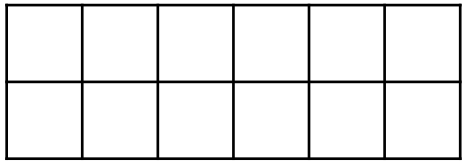


Input Image
(4*8)



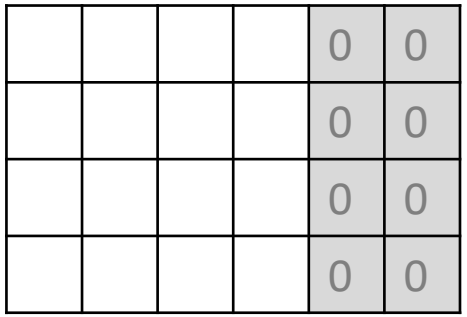
Feature
Detector
(3*3)

=

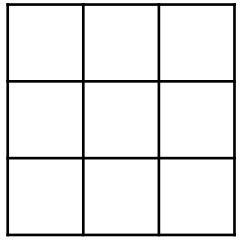


Feature Map
(2*6)

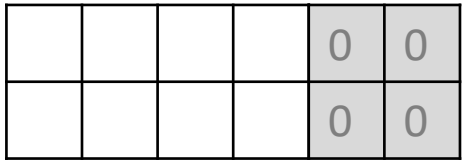
Split image



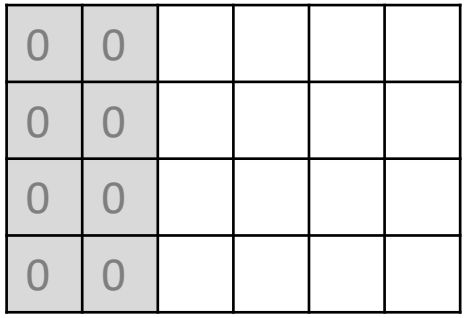
Zero padding



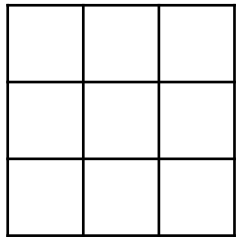
=



Zero padding



Zero padding



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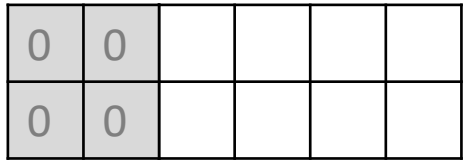
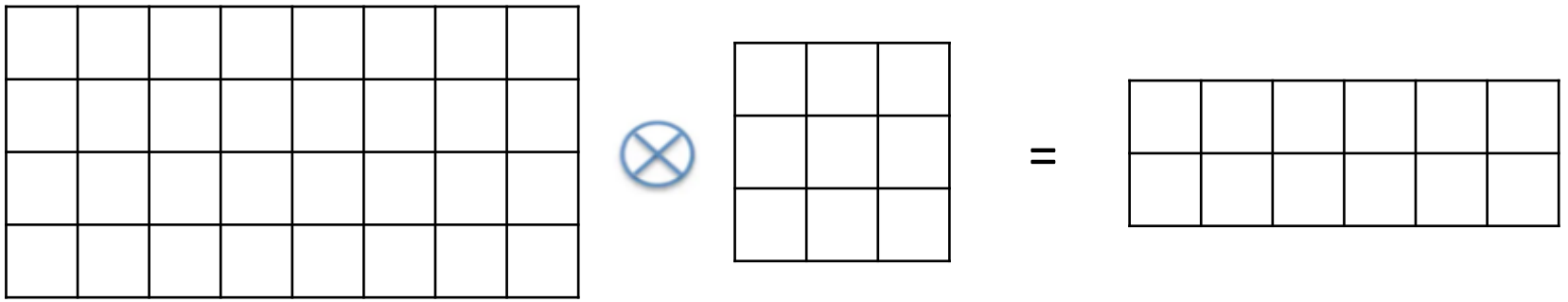
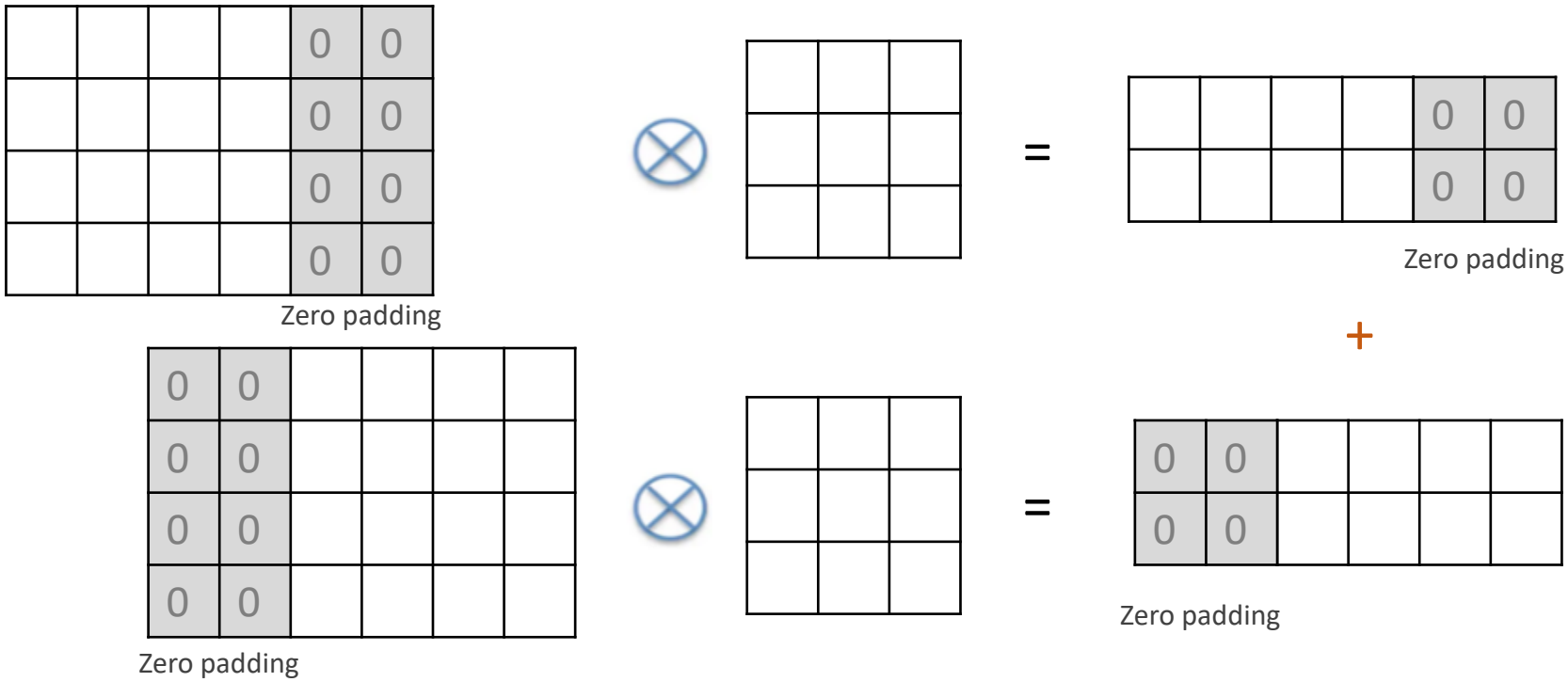


Zero padding


Input Image
(4*8)
Feature
Detector
(3*3)
Feature Map
(2*6)

Split image

(=)


0
Zero padding
Zero padding
+
Zero padding

Follow up

1. To consider input /weight and output stationary to do the optimization.