Research of AI accelerator

Con2d Transformation

Input Image (4*8) ⊗ Feature Detector (3*3) = Feature Map (2*6)
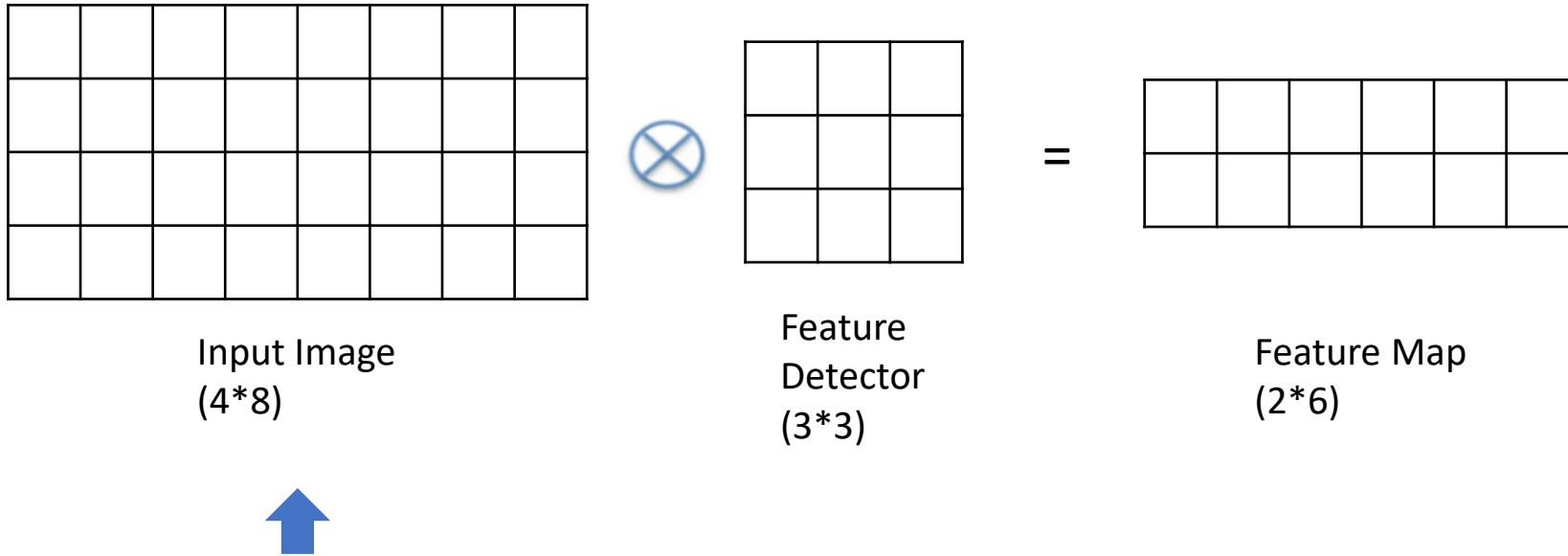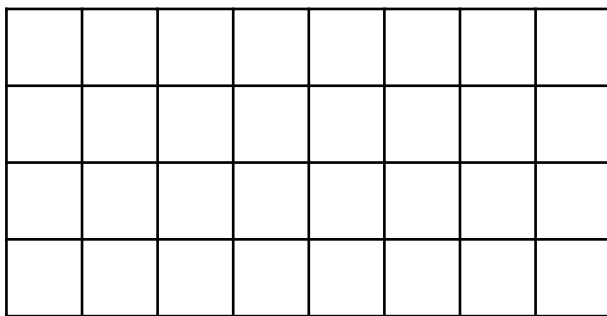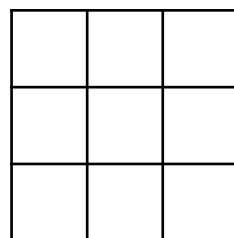
To split input image to fit hardware constraints

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

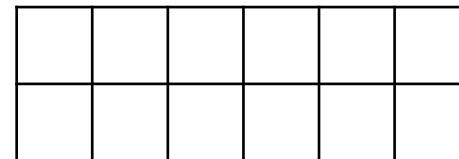Input Image (4*8)

Feature Detector (3*3)
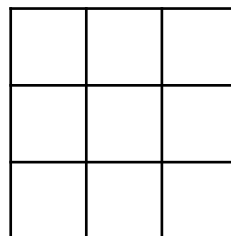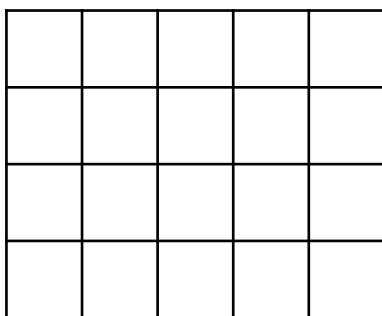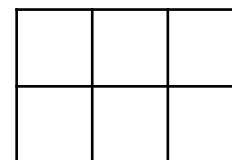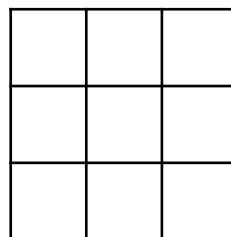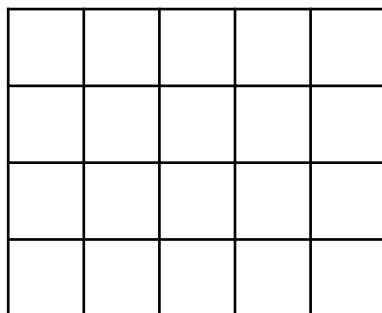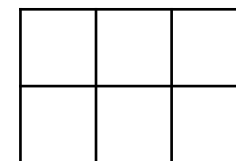
Feature Map (2*6)

Split image

Concat

(=)

3.
Along input channel dimension

Input Image
(2*4*8)

Feature
Detector
(2*3*3)

Feature Map
(2*6)

channel 2

channel 1

channel 1

channel 2

(=)

channel 1

channel 1

+

channel 2

channel 2

Appendix

Input Image
(4*8)

Feature
Detector
(3*3)
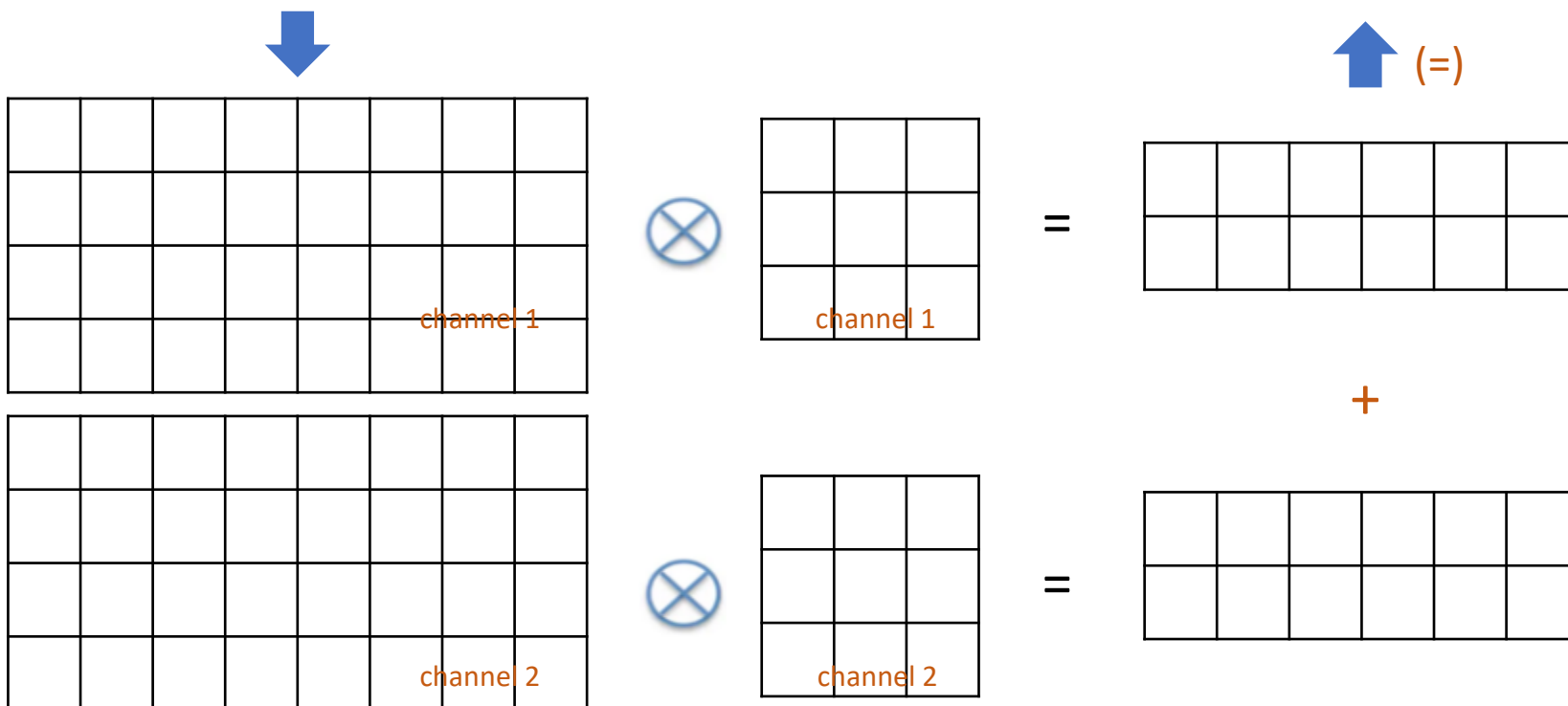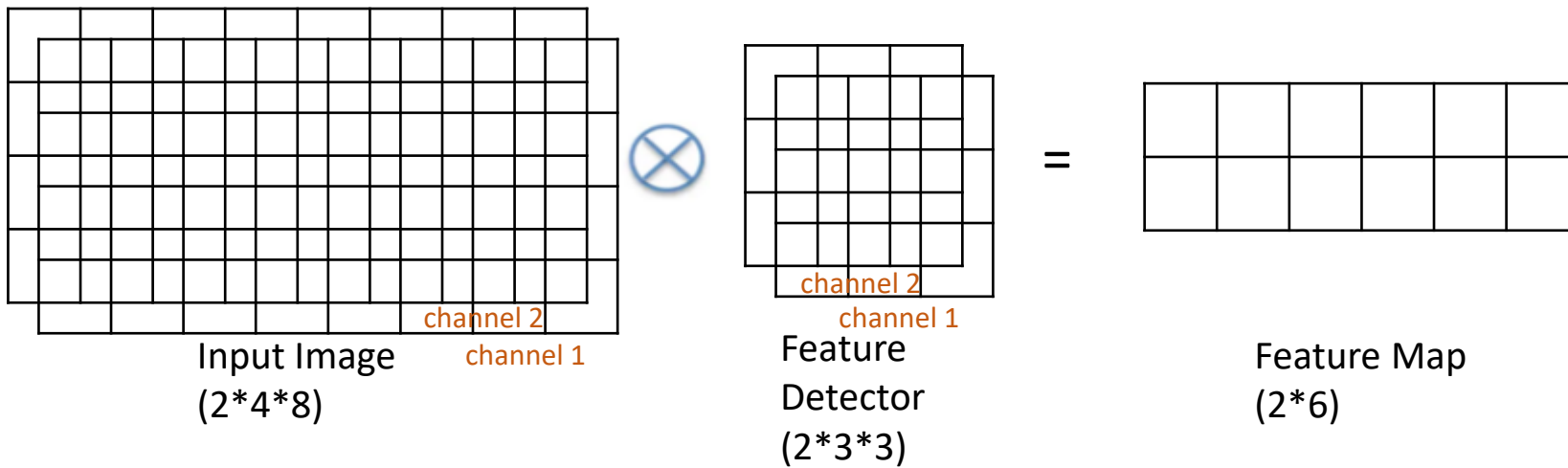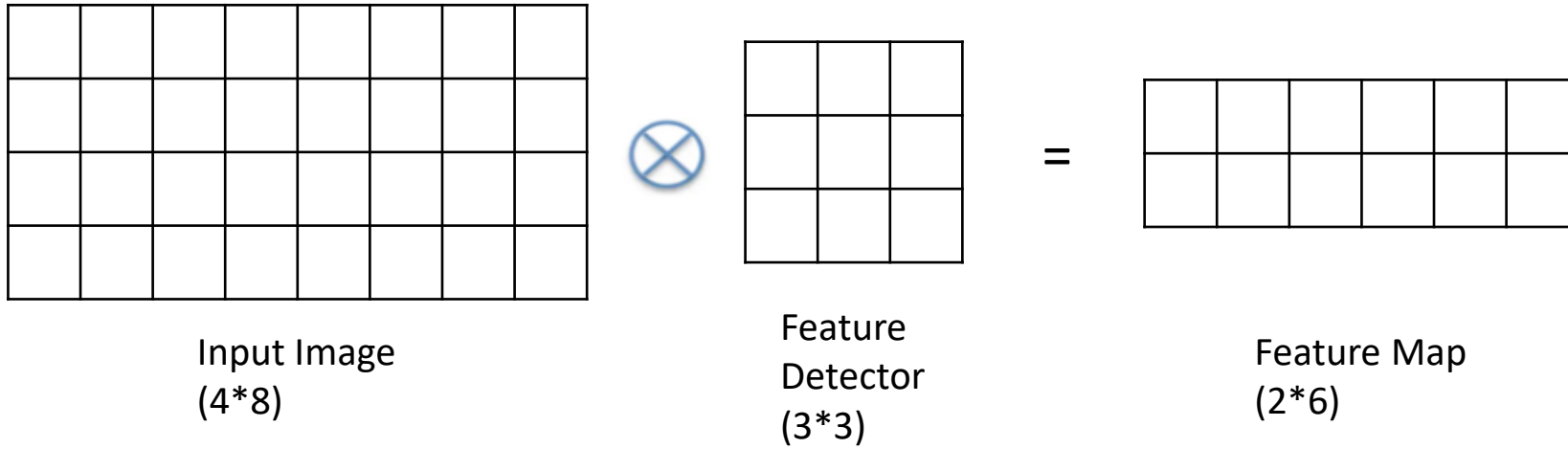
Feature Map
(2*6)
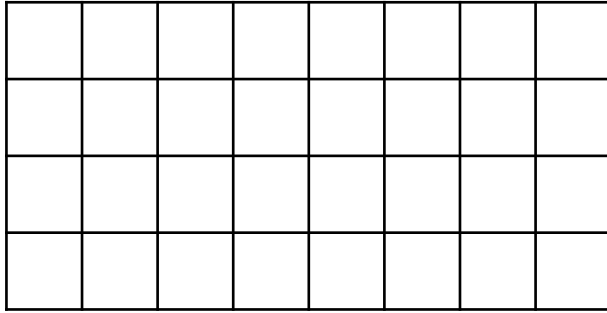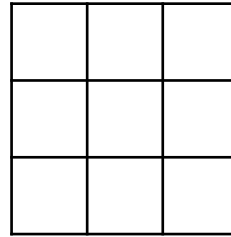
Split input image with weight

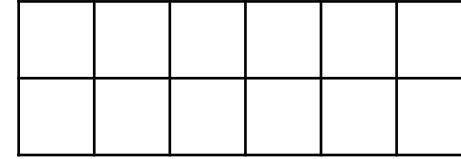To split input image to fit hardware resource constraints
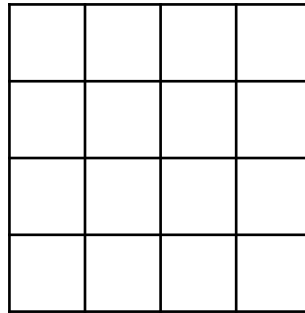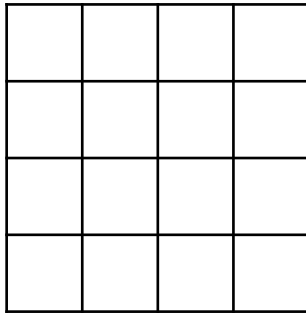
Input Image
(4*8)

$\otimes$

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) $\otimes$ 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

Zero padding

Zero padding

Zero padding

Zero padding

Input Image
(4*8)

Feature
Detector
(3*3)

Feature Map
(2*6)

Split image

(=)

Zero padding

Zero padding

Zero padding

+

Zero padding

Follow up

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