



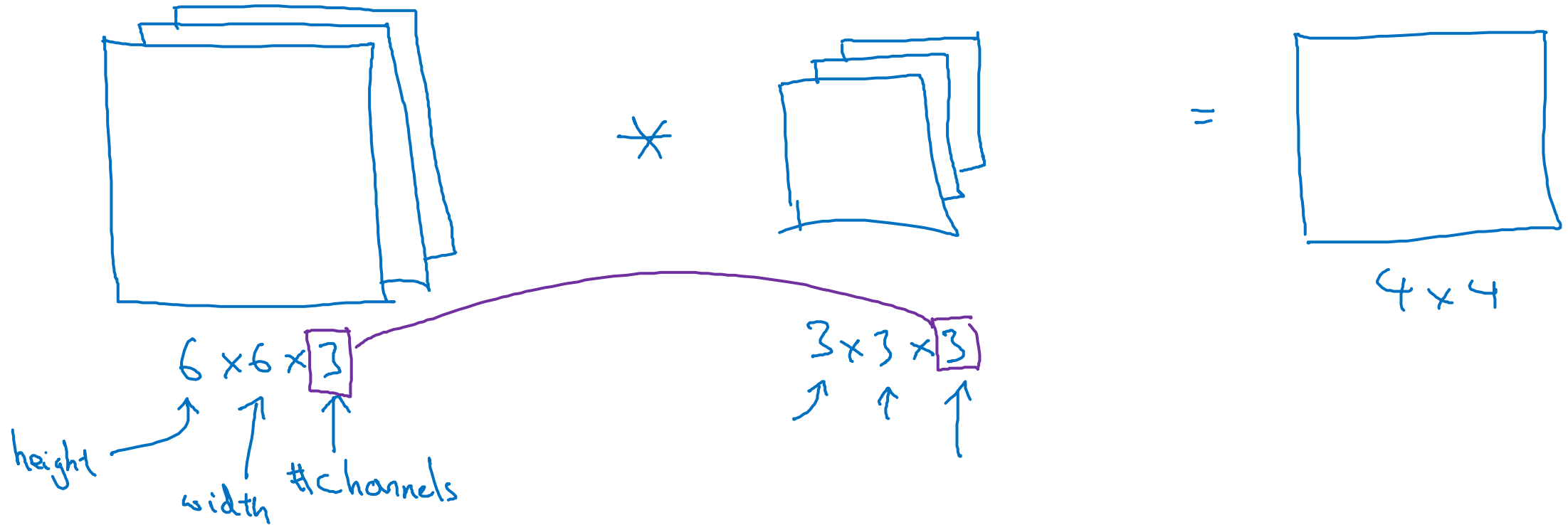
deeplearning.ai

# Convolutional Neural Networks

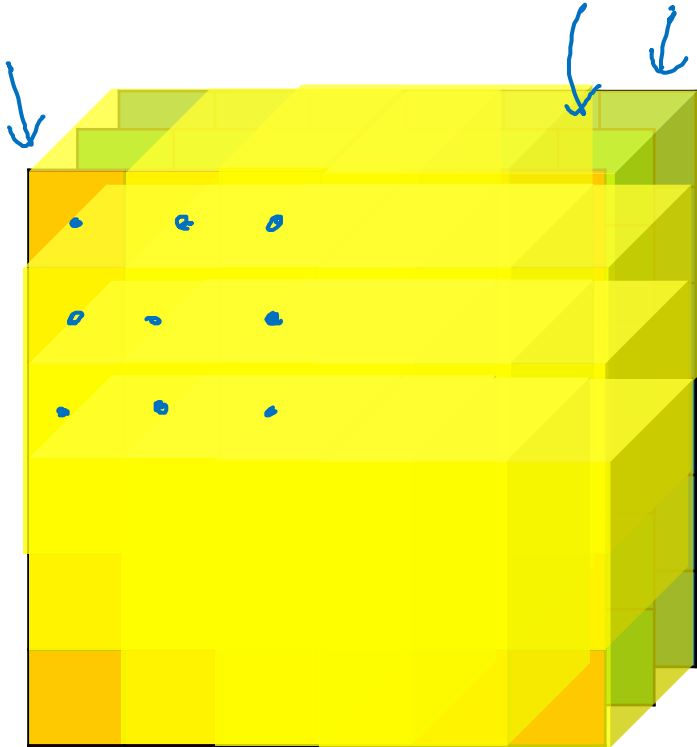
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## Convolutions over volumes

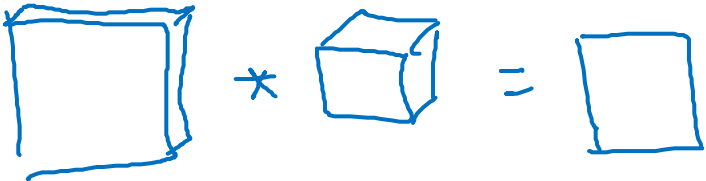
# Convolutions on RGB images



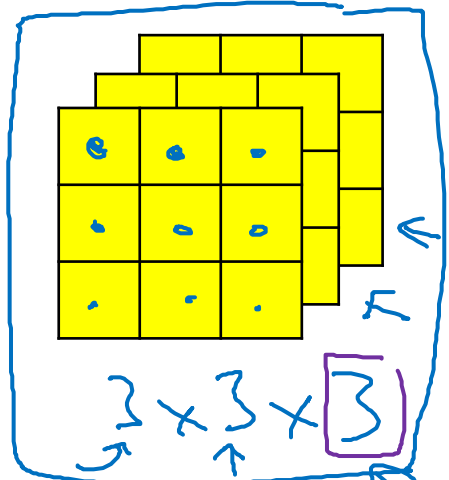
# Convolutions on RGB image



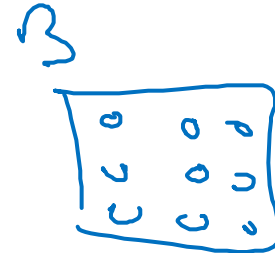
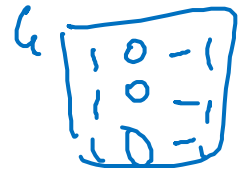
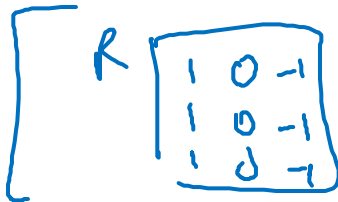
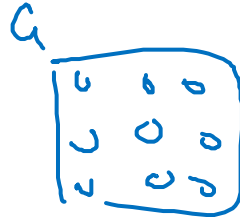
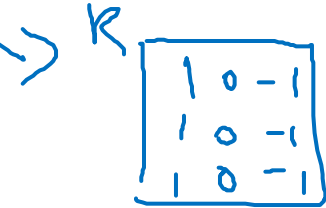
$6 \times 6 \times 3$   
↑    ↑    ↑



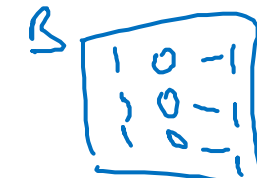
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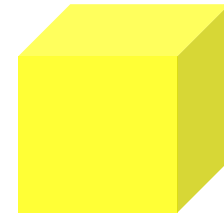
27 numbers



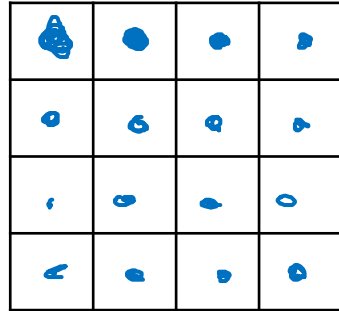
→  $3 \times 3 \times 3$



→  $3 \times 3 \times 3$

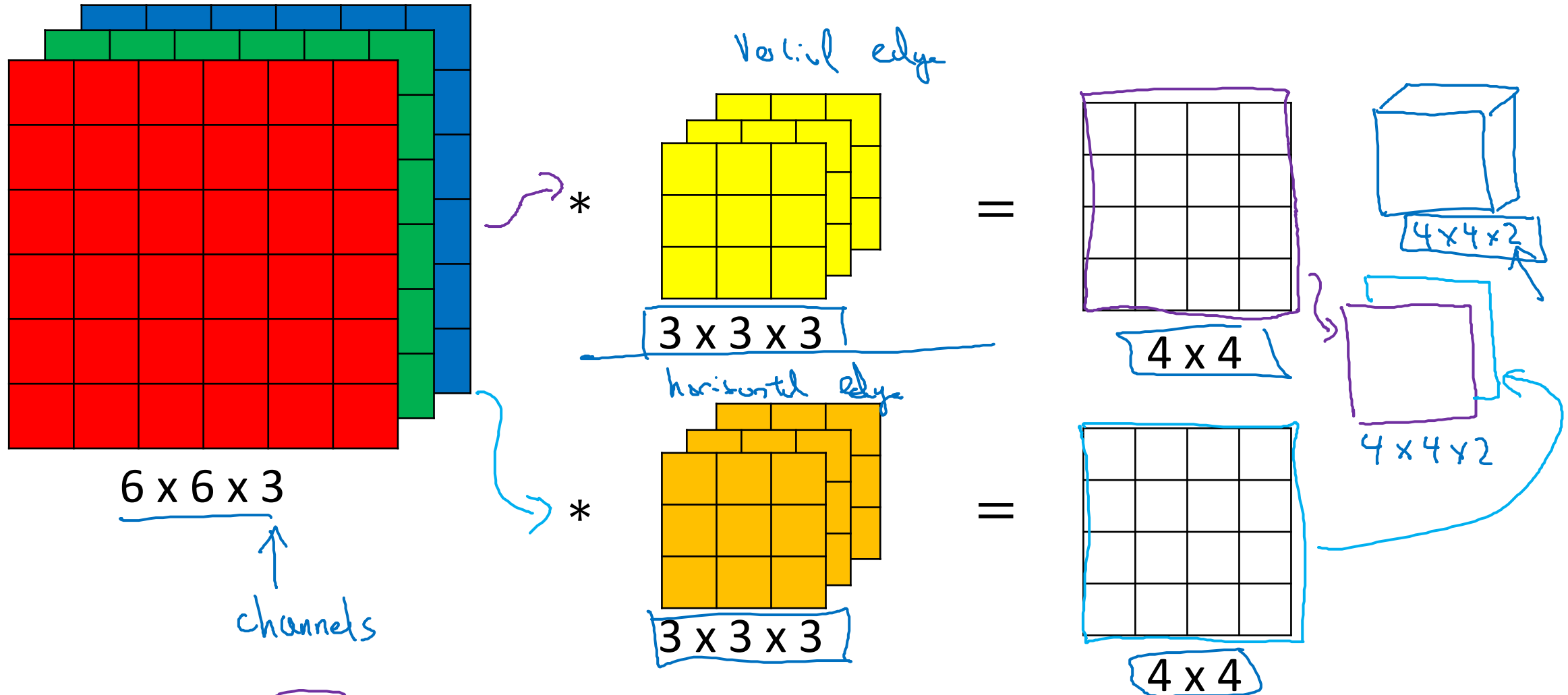


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4 x 4

# Multiple filters



Summary:  $n \times n \times n_c$   $\times$   $f \times f \times n_c$   $\rightarrow$   $\frac{n-f+1}{4} \times \frac{n-f+1}{4} \times n_c'$

$6 \times 6 \times 3$   $3 \times 3 \times 3$   $4 \times 4 \times 2$   $\uparrow$  #filters