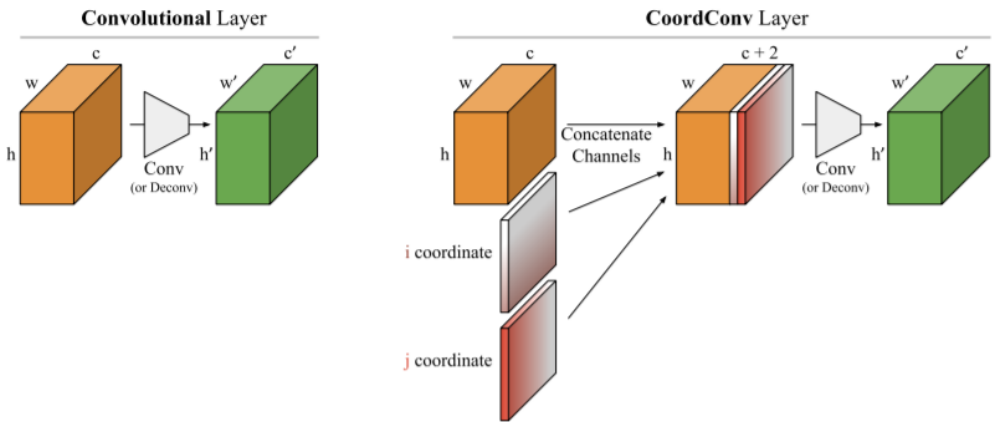
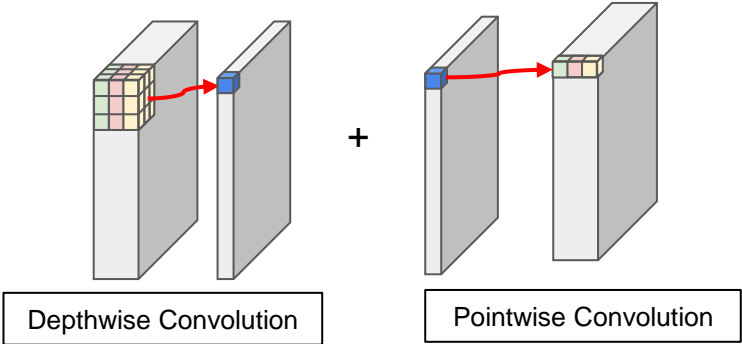


Convolutional Layer Variations

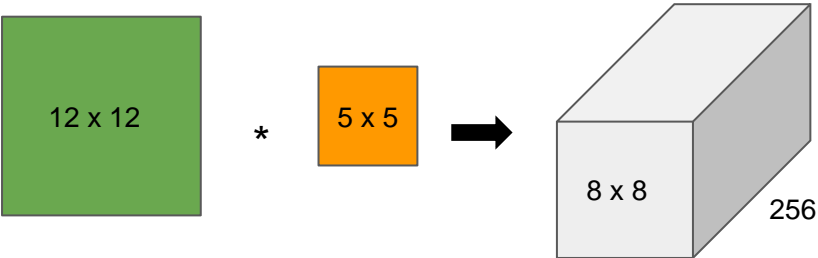
CoordConv.



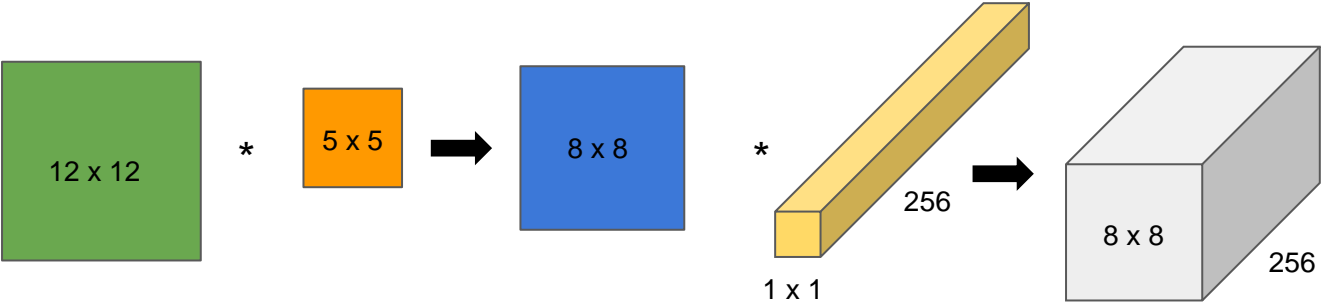
Seperable Conv.



Separable Convolutional Layer (Computation Example)

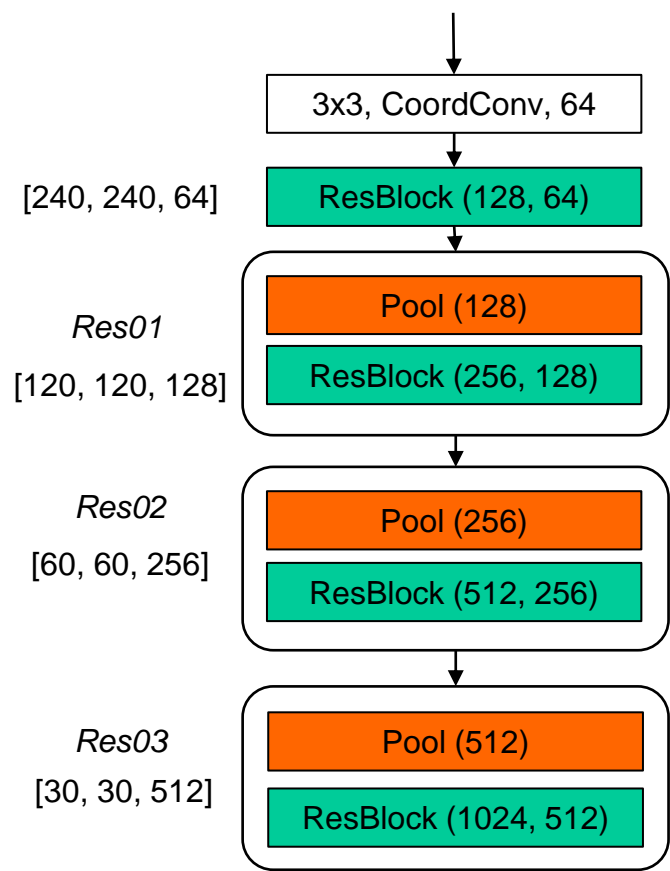


(Normal) Multiplication: $5 \times 5 \times 8 \times 8 \times 256 = 409,600$



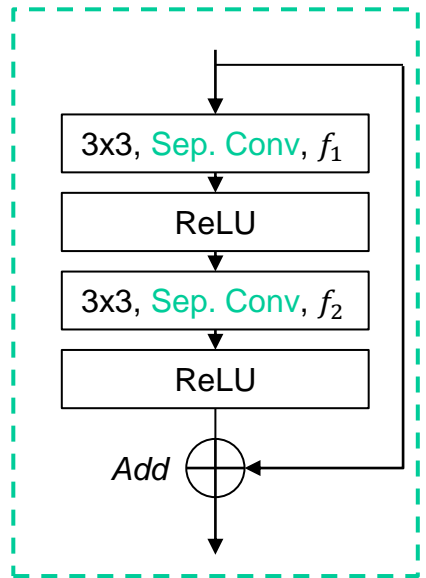
(Separable) Multiplication: $5 \times 5 \times 8 \times 8 + 8 \times 8 \times 1 \times 1 \times 256 = 17,984$

ResNet

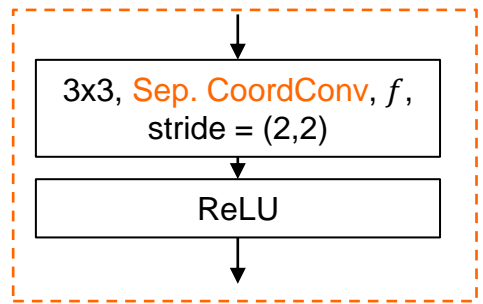


*Dim: [w, h, c]

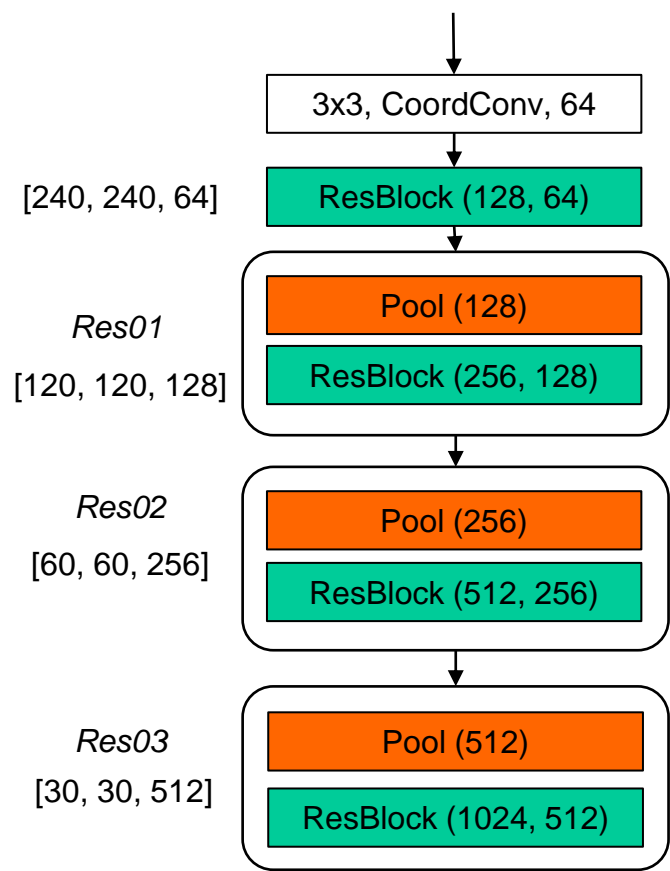
ResBlock (f_1, f_2):



Learnable Pooling Layer(f):

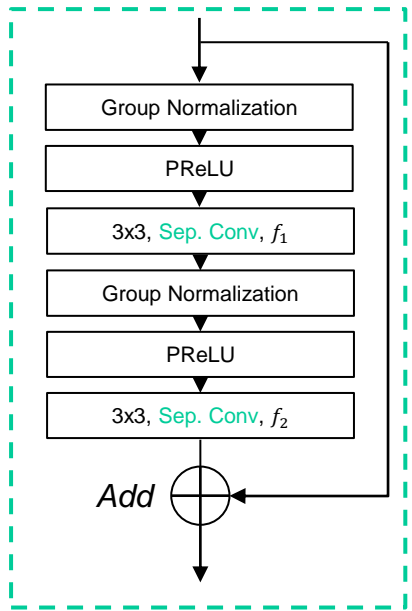


ResNet v02

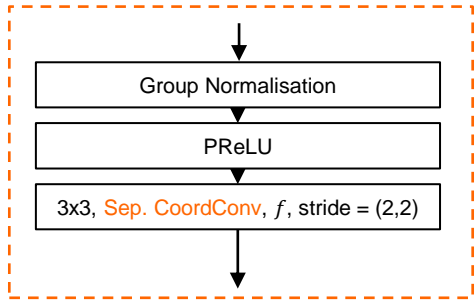


*Dim: $[w, h, c]$

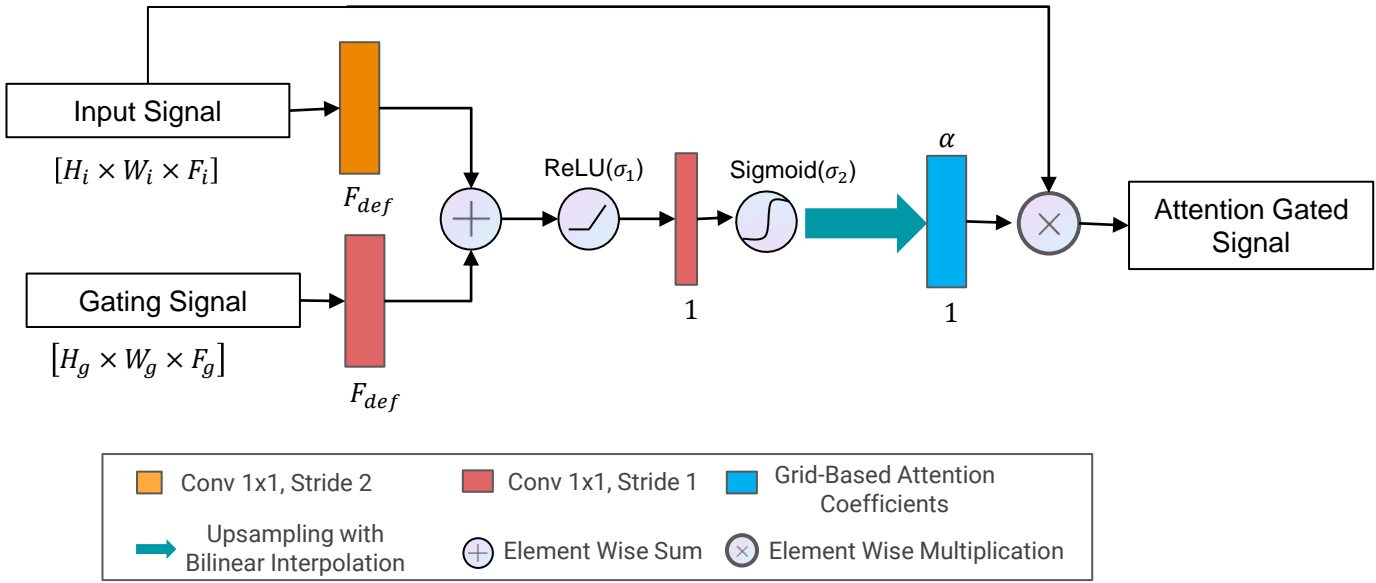
ResBlock (f_1, f_2):

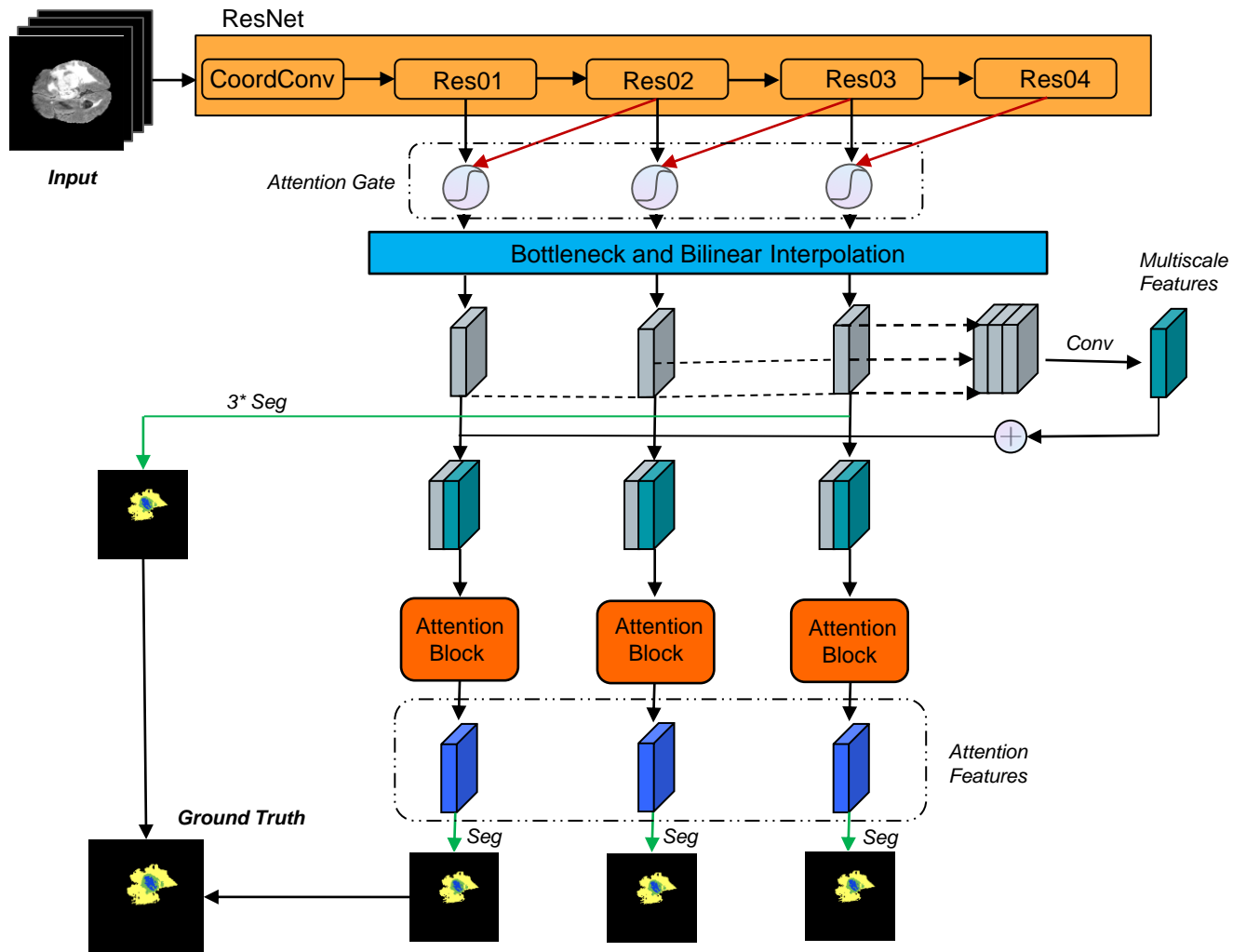


Learnable Pooling Layer(f):

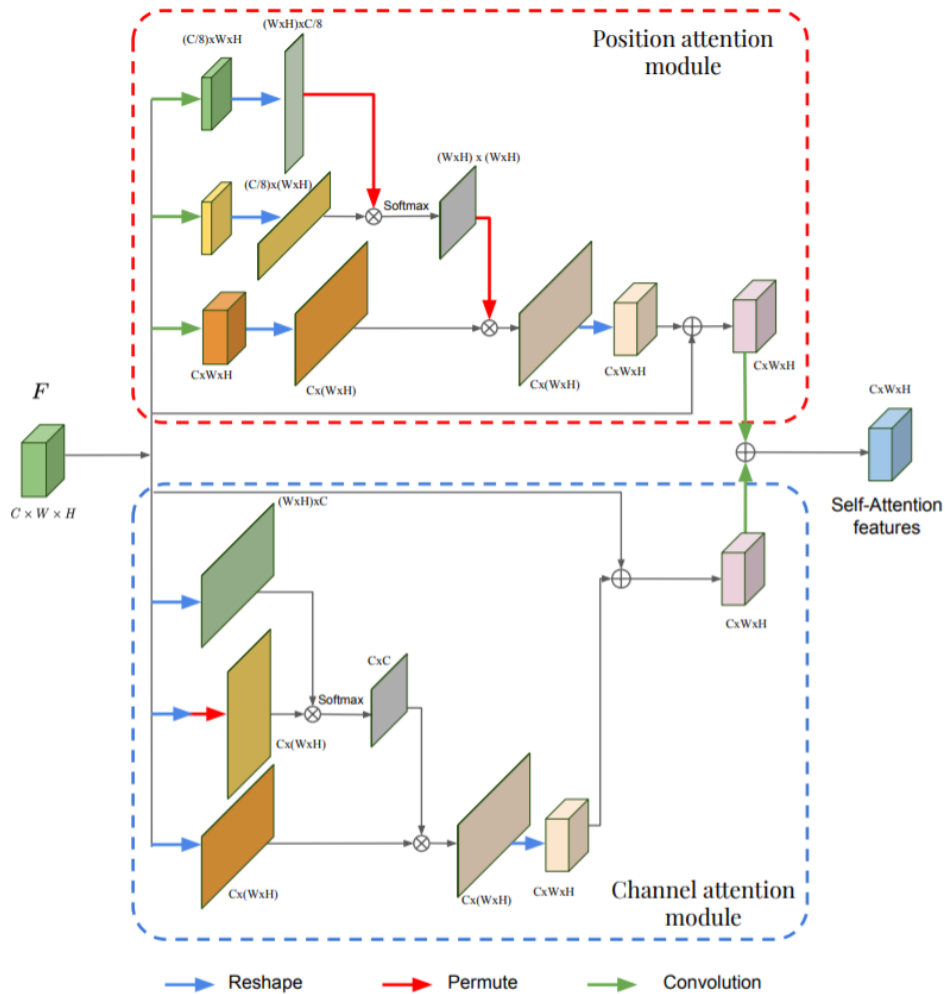


Attention Gate

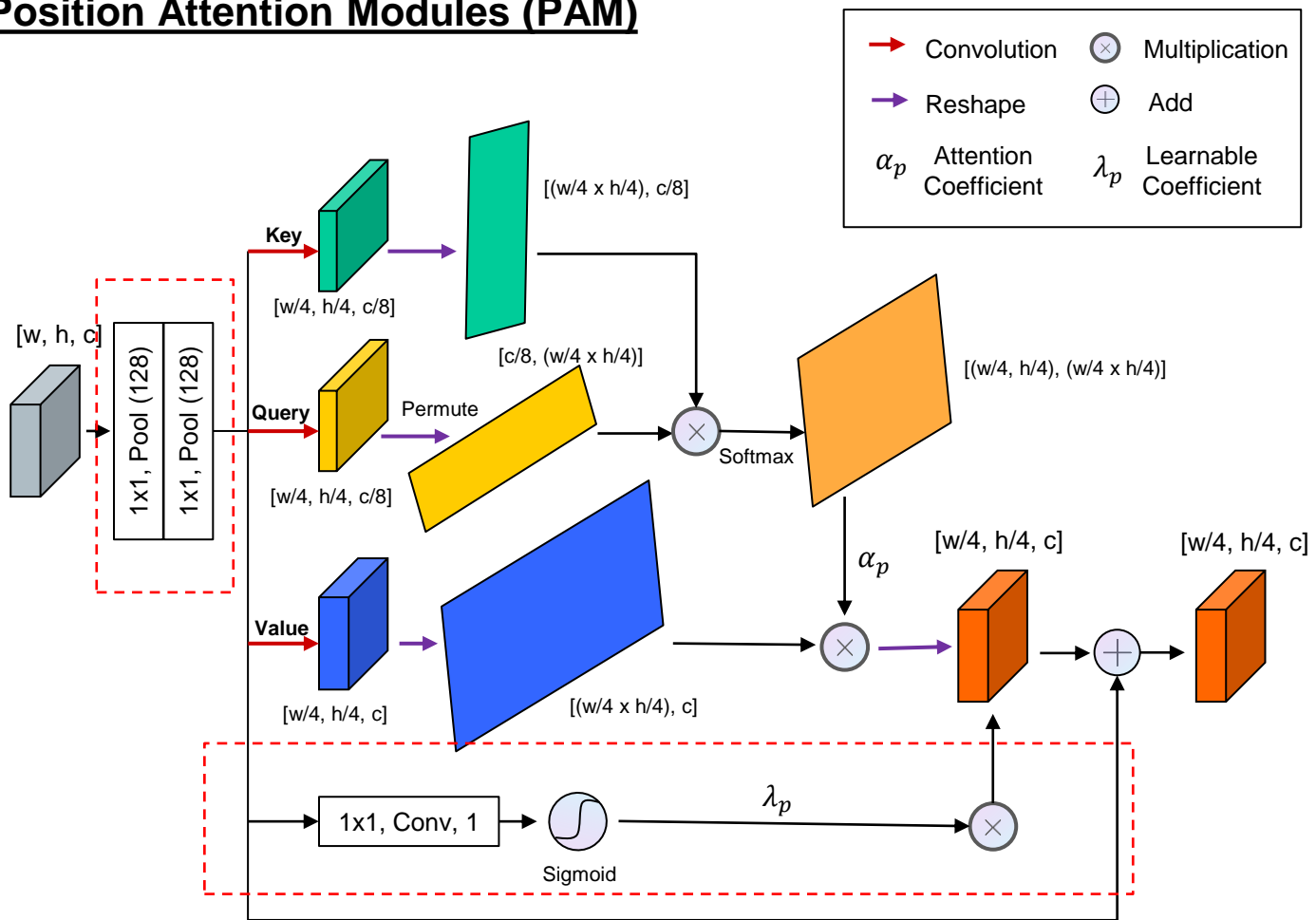




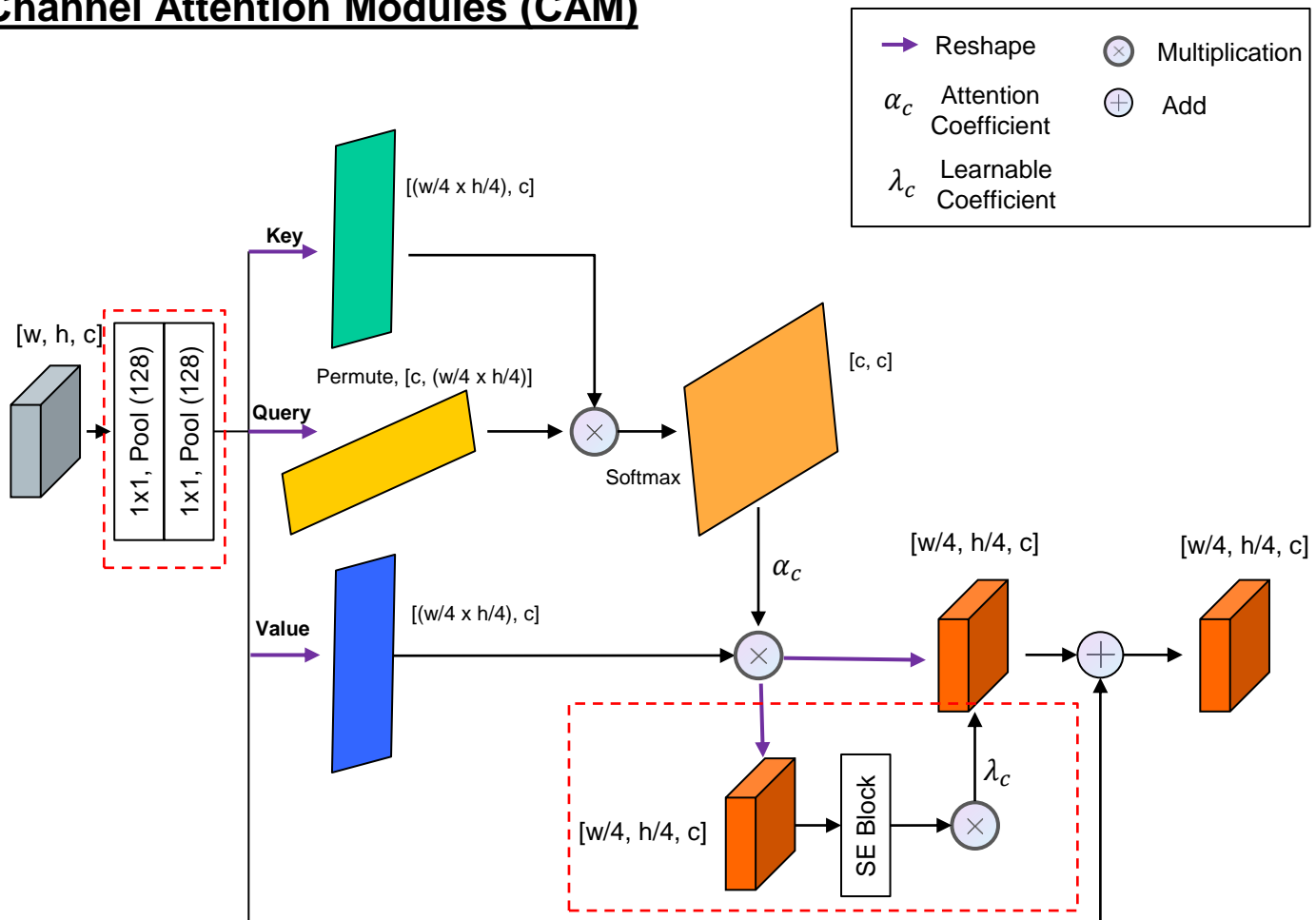
PAM and CAM



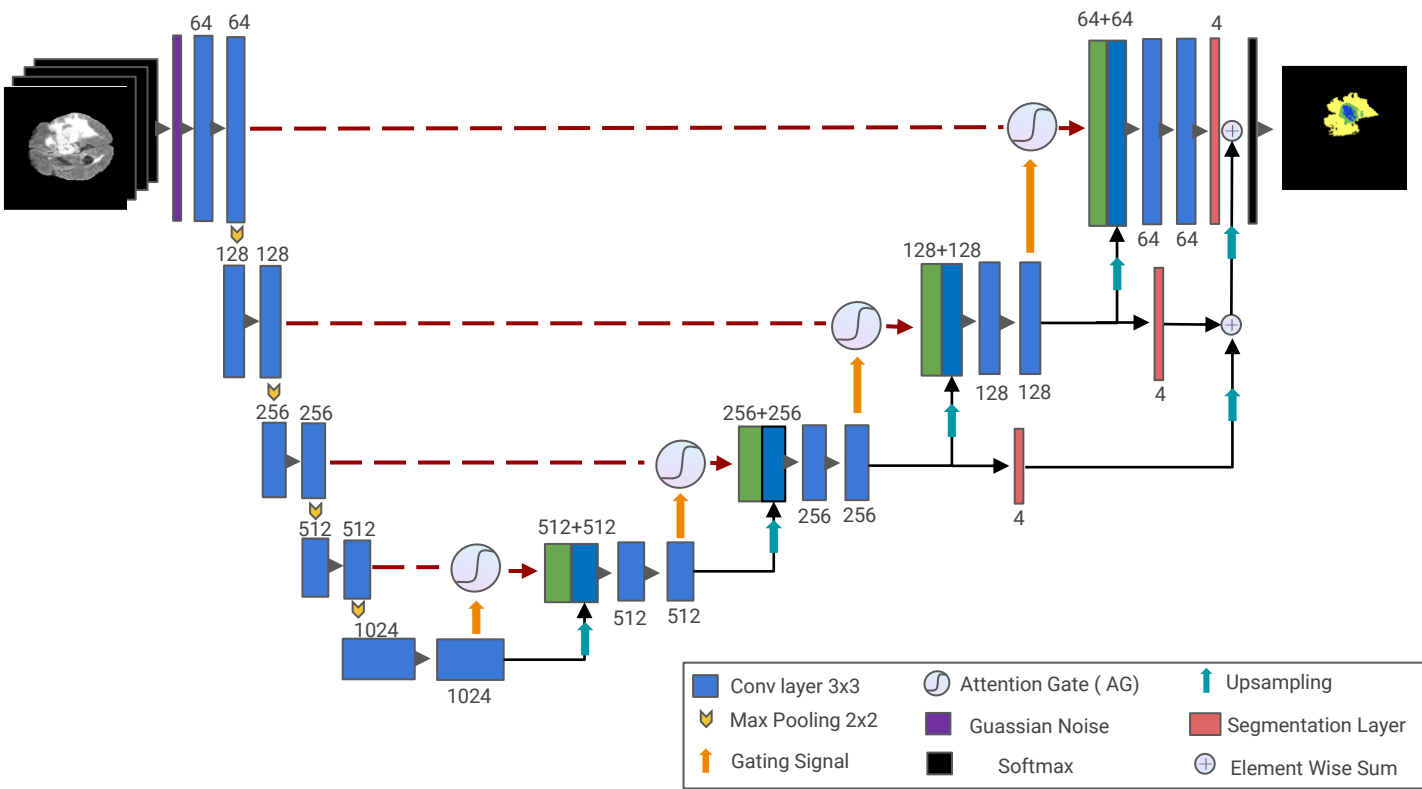
Position Attention Modules (PAM)



Channel Attention Modules (CAM)



Deep Supervised Attention Unet



Attention Mechanism

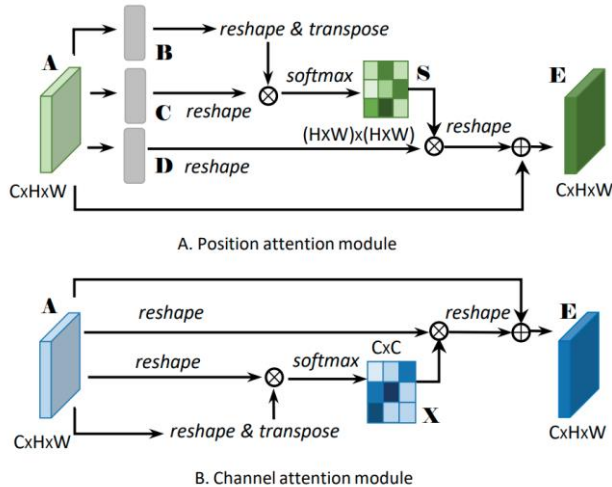


Fig.1A. Spatial self attention (A) Position attention module (PAM) and channel self attention (B) Channel attention module (CAM). Figure from [1]

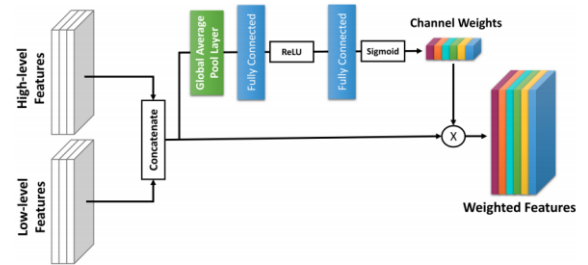


Fig.2A. Channel attention block(CAB) with squeeze and attention block. Figure from [2]

[1] Image source: Fu.J., Liu.J., Tian.H., Li.Yong., Bao. Y., Fang.Z., Lu.H., Dual Attention Network for Scene Segmentation, Computer Vision and Pattern Recognition 2019.

[2] Image source: Noori, M., Bahri, A., Mohammadi, K.: Attention-guided version of 2d unet for automatic brain tumor segmentation. In: 2019 9th International Conference on Computer and Knowledge Engineering (ICCKE). pp. 269–275.