# Fusion Segmentation Model: Multi-Strategy Architecture



TTG Encoder (ResNet)

TTG Input
B 176 512 512

Enc 256 256 64
Enc 128 128 128
Enc 64 64 256
Enc 32 32 512

DCT Input
B 292 64 64

DCT Encoder (ResNet)

Enc 32 32 64
Enc 16 16 128
Enc 8 8 256
Enc 4 4 512

Adaptive Fusion

FusionStrategy

Input: Early fusion
Fused

Input/Multi/Latent
Fused

Multi: Multi-scale
Fused

Latent: Late fusion
Fused

Configurable Fusion Strategies

DecoderSelection

U-Net, U-Net++
U-Net/FPN/++
FPN, LinkNet
UperNet

Configurable Decoder

Dec 32 32 256
Dec 64 64 128
Dec 128 128 64
Dec 256 256 32
Seg Head 512 512 16

Multiple Decoder Options

Output
B K 512 512

BCE Loss
weight

Dice Loss
(1-) weight

CombinedLoss
Weighted Sum

MetricsIoU, Dice
Per-class & Macro

Parameters: backbone_name (ResNet variants), fusion_strategy (input/multi/latent),
decoder_type (unet/fpn/unet++/linknet/upernet), _loss (BCE/Dice balance)

Legend:
- Input/Output
- Conv Block
- Fusion
- Processing
- Fusion
- Skip
- Forward