Semantics-Adding Flaw-Erasing Network for Semantic Human Matting

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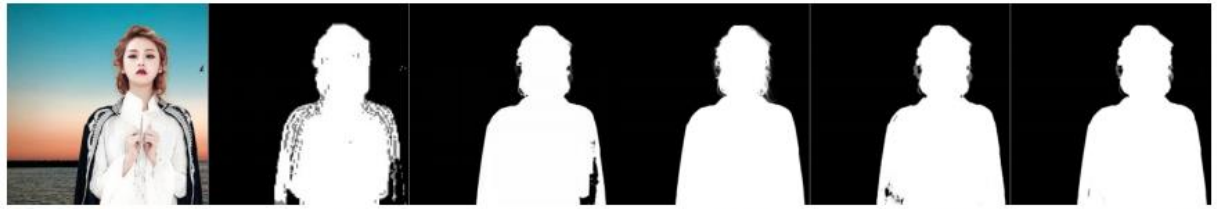
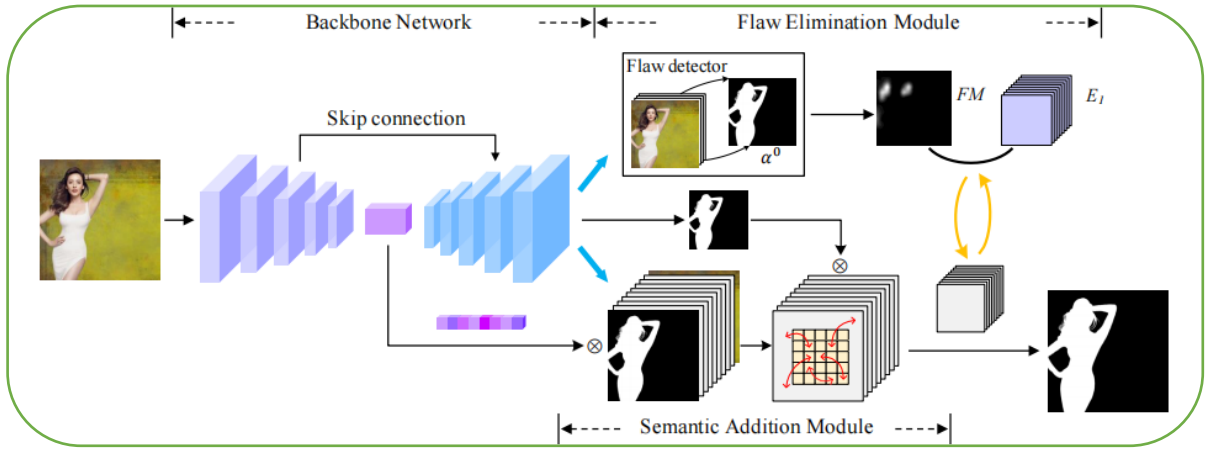
※ Background: Limitations of the pseudo trimap based human matting approach.



(a) Input image (b) Pseudo trimap (c) Matte of (b) (d) Ground truth (e) Our initial matte (f) Our final matte

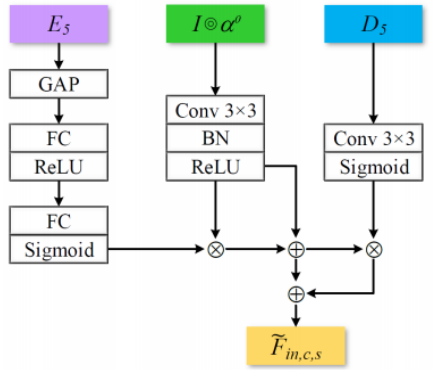
Given an input image (a), a state-of-the-art pseudo trimap based method would predict a pseudo trimap first (b) and then an alpha matte (c). However, errors appearing in the pseudo trimap deteriorate the alpha matte prediction. Our approach first predicts an initial alpha matte (e), to which we then apply SAM and FEM to produce our matte (f).

※ Our Proposed SAFE-NET

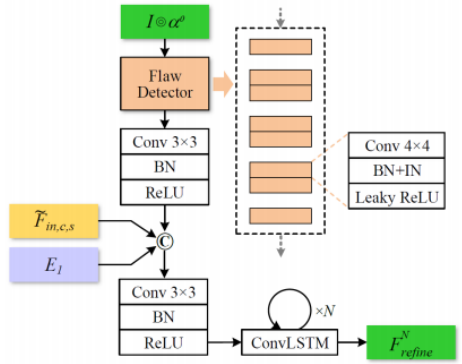


The network predicts an initial alpha matte α^0 using the backbone network,and it then predicts a first refined alpha matte which iteratively corrects the erroneous regions in the initial alpha matte based on human semantic context learning and the guidance of the flaw detector.

※ Experiment Results



Semantic addition module (SAM)



Flaw Elimination Module (FEM)

※ Proposed Benchmark

※ Experiment Results

Method	Addtional Input	MSE↓	SAD↓	Grad↓	Conn↓
CF [18]	Trimap	72.51	42.81	33.45	14.77
DIM [33]	Trimap	28.36	14.23	15.85	4.916
SHM [6]	-	68.58	31.98	25.15	10.37
HATT [24]	-	33.85	15.08	15.18	5.203
BSHM [21]	-	53.18	19.50	15.57	6.812
Backbone	-	41.18	18.42	18.03	6.782
Ours	-	28.81	12.06	11.90	4.280