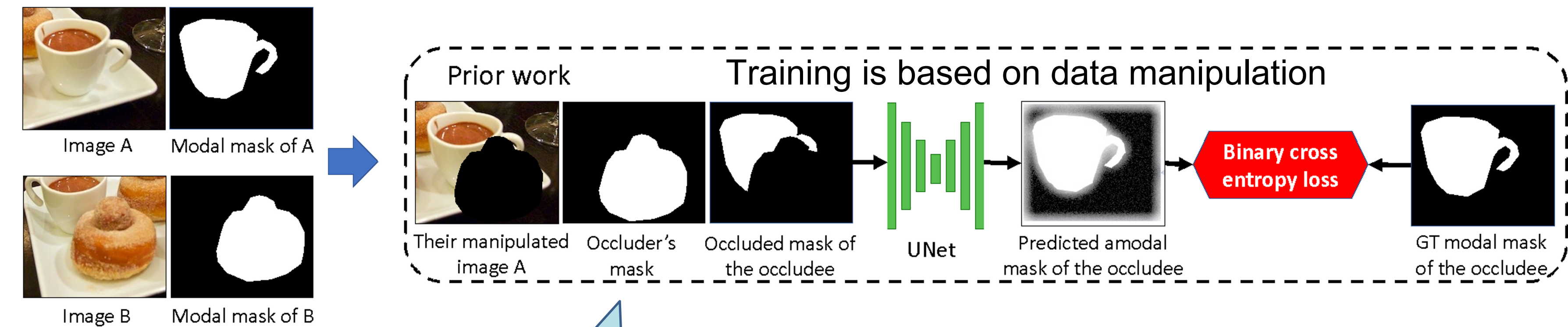


Problem Statement

- Segmentation of visible and occluded object parts -- **amodal** object segmentation
- Weak supervision: training has access to ground-truth **modal** segmentation masks of visible object parts.

Prior Work – PCNet



Motivation

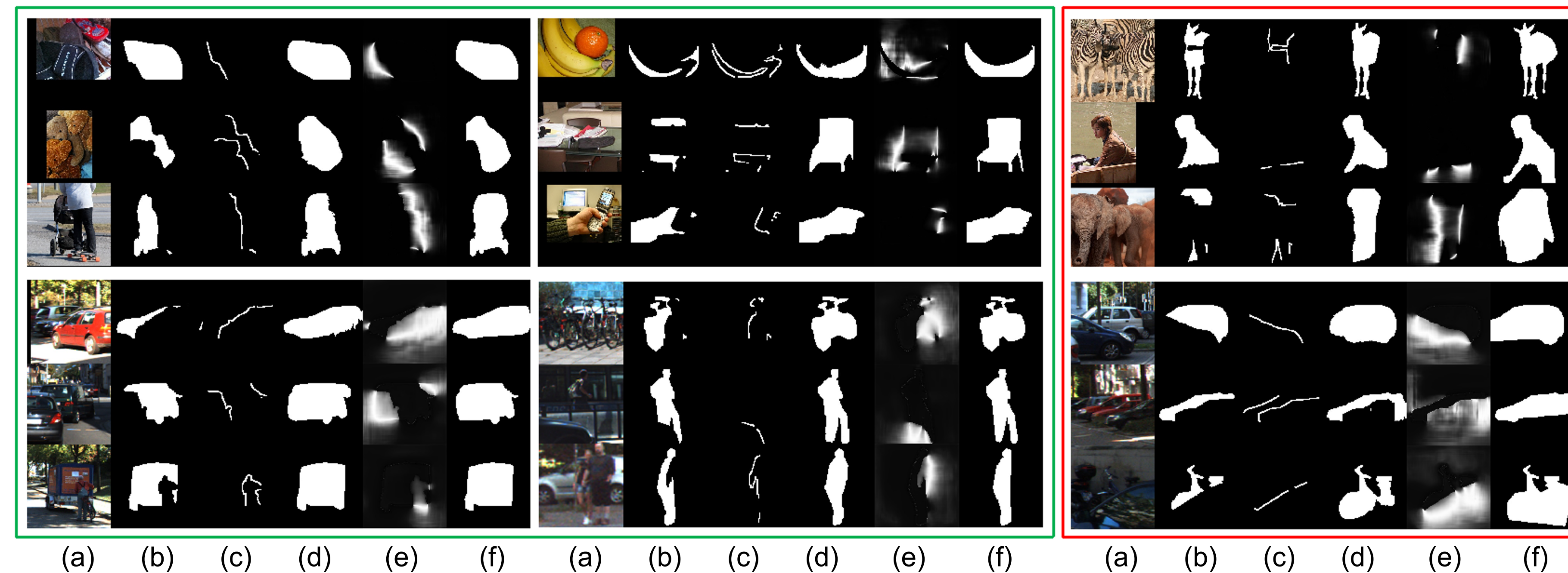
Restrictive, since the occluder itself cannot be partially occluded.

Contribution 1: Instead of the occluder mask use the occlusion boundary as input to UNet.

Does not account for uncertainty that many amodal masks may correspond to the same modal mask.

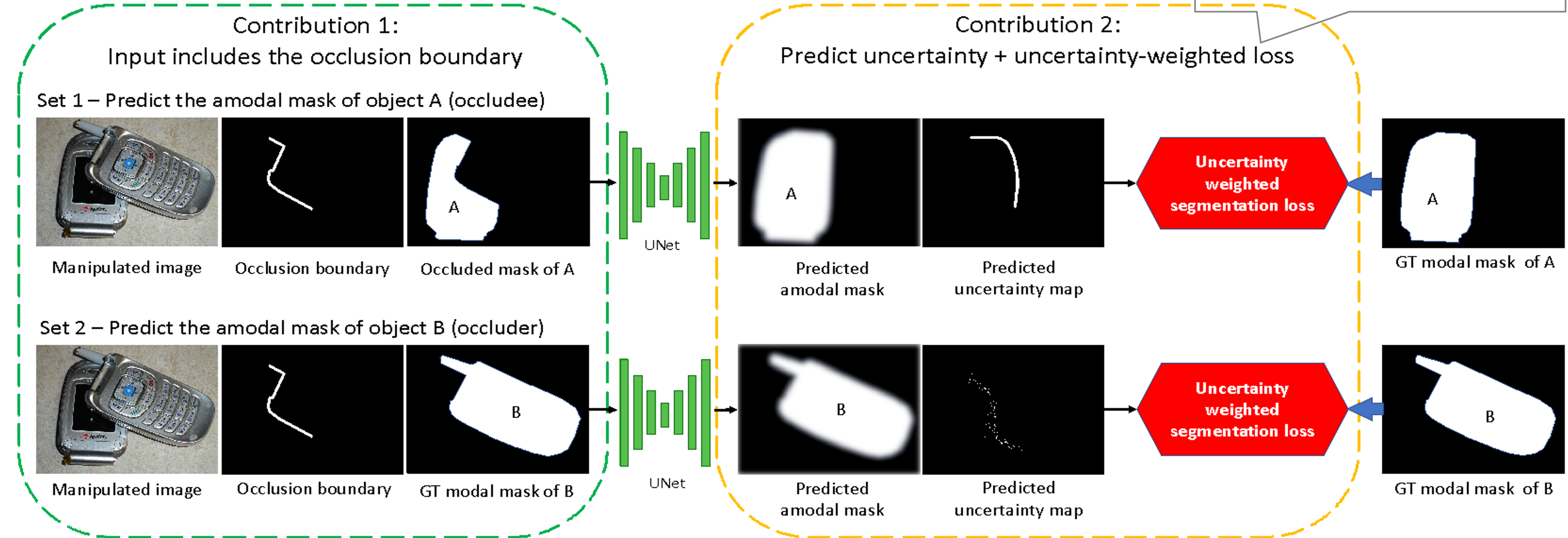
Contribution 2: Estimate uncertainty of the predicted amodal mask, and use uncertainty to regularize learning.

Amodal Completion Results



(a) input image, (b) modal mask, (c) occlusion boundary, (d) predicted amodal mask, (e) predicted uncertainty map, (f) ground-truth amodal mask.

Our Approach



Amodal Instance Segmentation Results

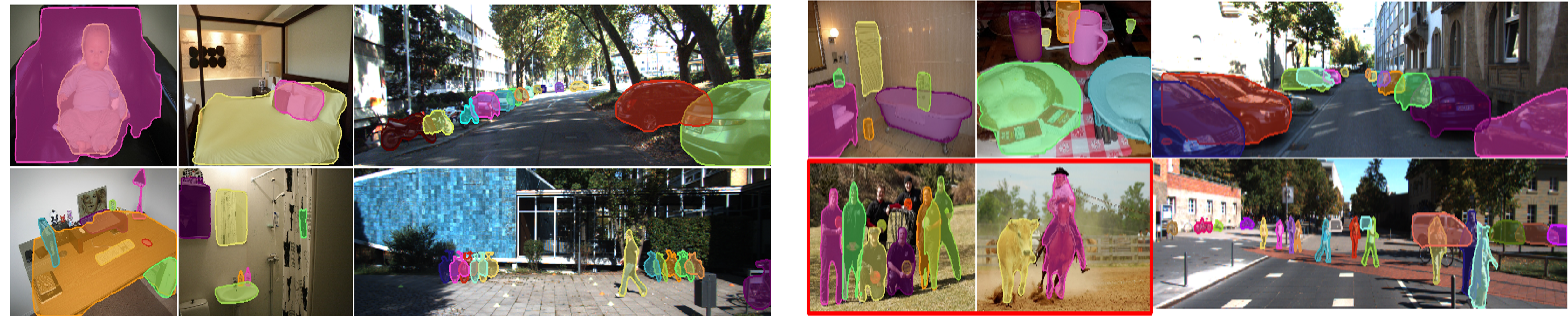


Table 1. Amodal completion and ordering recovery

Methods	COCOA-val		COCOA-test		KINS-test		
	O-Acc	mIoU	O-Acc	mIoU	O-Acc	mIoU	inv-mIoU
Amodal-VAE [75] (reported)	-	-	-	-	-	94.68	62.85
PCNet-m [123] (reported)	87.10	81.35	-	-	92.50	94.76	-
PCNet-m (reproduced)	85.75	80.73	86.73	86.63	91.73	94.52	59.24
Boundary→PCNet-m	89.01	82.85	89.22	88.67	92.26	94.65	62.77
Uncertainty→PCNet-m	88.60	82.49	88.40	88.15	92.08	94.61	62.00
uBCE→ASBU	89.23	83.18	89.32	88.10	92.15	94.34	63.41
ASBU	90.33	84.22	90.77	89.87	92.65	94.83	64.41

Table 2. Amodal segmentation of Mask-RCNN

Datasets	Trained on	AP	AP ₅₀	AP ₇₅
COCOA-val	GT amodal	22.2	44.8	20.0
	PCNet-m amodal	21.0	43.4	18.5
	ASBU amodal	22.2	44.5	20.0
COCOA-test	GT amodal	23.9	48.4	21.5
	PCNet-m amodal	22.6	46.8	19.7
	ASBU amodal	23.8	47.9	21.2
KINS-test	GT amodal	30.8	53.9	31.6
	PCNet-m amodal	29.1	51.8	29.6
	ASBU amodal	29.3	52.1	29.7